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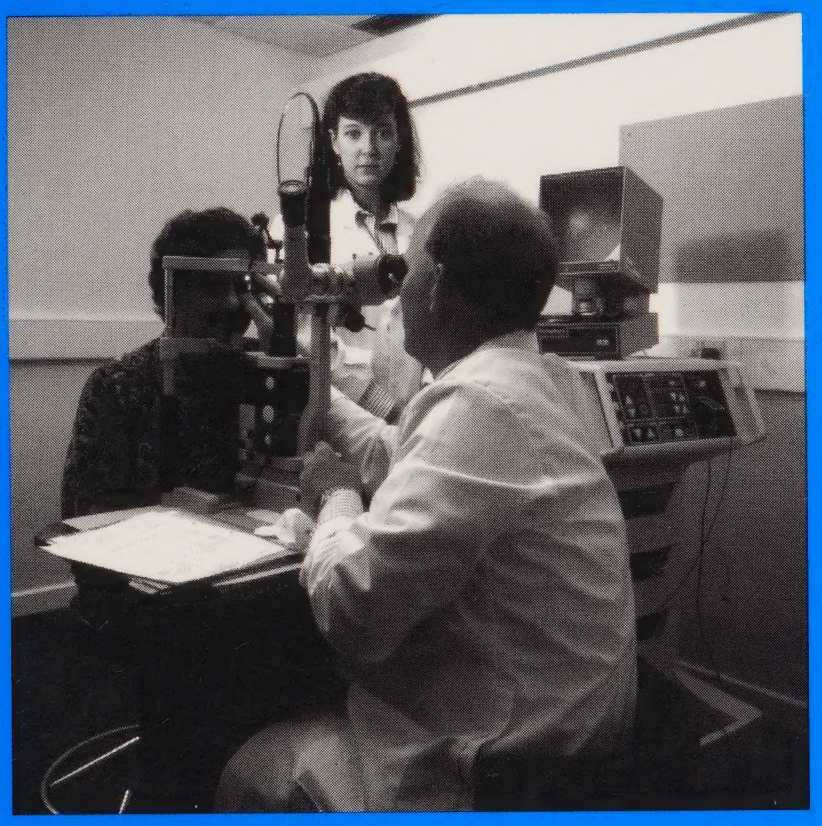
HBN 12 Supp 4
Ophthalmology

Ophthalmology

Health Building Note 12

Supplement 4



NHS Estates
An Executive Agency of the Department of Health

Ophthalmology

Health Building Note 12

Supplement 4

London: HMSO

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An Executive Agency of the Department of Health

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The price of this publication has been set to make some contribution to the costs incurred by NHS Estates in its preparation.

About this series

The Health Building Note (HBN) series is intended to give advice on the briefing and design implications of Departmental policy.

These Notes are prepared in consultation with representatives of the National Health Service and appropriate professional bodies. Health Building Notes are aimed at multidisciplinary teams engaged in:

- designing new buildings;
- adapting or extending existing buildings.

Throughout the series, particular attention is paid to the relationship between the design of a given department and its subsequent management. Since this equation will have important implications for capital and running costs, alternative solutions are sometimes proposed. The intention is to give the reader informed guidance on which to base design decisions.

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British Orthoptic Society

The Patients' Association

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Executive summary

This document is a supplement to HBN 12 'Out-patients department', and replaces HBN 39 'Ophthalmic clinic', 1982.

The main functions of an ophthalmology out-patients department include specialist consultation, examination and treatment in respect of eye disorders and diseases that do not require either daycase or in-patient activity. This health building note supplement describes accommodation suitable for the examination, treatment and care of ophthalmic out-patients, but does not include guidance for ophthalmic services provided in highly-specialised supra-regional centres and by dispensing opticians.

The paramedical services related to ophthalmology are orthoptics, optometry, low vision aids and ophthalmic photography. Accommodation for each of these services is described in this supplement.

Specific spaces in an ophthalmology out-patients department included in this Supplement but which are not described in HBN 12 are:

- vision testing spaces;
- visual fields test room;
- consulting/examination suite;
- ultrasound room;
- laser treatment room;
- photography room;
- darkroom;
- treatment room;
- recovery room;
- low vision assessment room;
- refraction/contact lens room;
- psychophysical and electrophysiology tests room;
- prosthetics room;
- consulting/examination suite – orthoptics;
- special examination room.

An ophthalmic consulting/examination (c/e) suite comprises a c/e room for the consultant supervising the clinic session and a number of supporting c/e spaces for other ophthalmic medical staff. Supporting c/e spaces may be either rooms or bays. Rooms offer complete privacy for the patient, whereas adjacent bays separated by privacy screens enable visual communication between the consultant and other medical staff, and ensure ease of staff movement between bays, while still affording patients a degree of privacy. This supplement assumes the use of bays as supporting c/e spaces. A guide to the number of c/e spaces required is outlined in Appendix B.

Ophthalmic investigations usually require low levels of background lighting. Clinical areas in ophthalmology departments may be designed deliberately without external windows to avoid glare problems. Where windows are provided in consulting/examination/ treatment areas, they will almost certainly require full blackout facilities. The provision of skirting-level lighting will help to prevent patients and staff tripping over equipment in c/e bays and treatment areas.

Many patients attending the ophthalmology department will be partially sighted or blind. The department should therefore be designed to enable these patients to find their way around independently, for example:

- the department should be located on the ground floor;
- floor surfaces should be even, with tactile indications of direction;
- there should be no obstructions in corridors and other public areas;
- signs should follow the RNIB/GDBA Joint Mobility Unit guidelines;
- clinics attended by partially sighted or blind patients, such as prosthetics and low vision aids, should be located close to the department entrance.

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1.0 Scope of Health Building Note 12 Supplement 4

Introduction

1.1 Health Building Note (HBN) 12, Supplement 4 is a guide to the planning and design of ophthalmology departments. It is a supplement to HBN 12, 'Out-patients department', 1990, which provides planning and design guidance for general out-patients accommodation. Supplement 4 should be read in conjunction with HBN 12.

1.2 This Supplement replaces HBN 39, 'Ophthalmic clinic', 1982 and responds to changes in ophthalmic medicine since that time, including:

- the development of ophthalmic medicine;
- technological advances in equipment design;
- the attendance of patients who are better informed and have higher expectations with regard to quality of service.

1.3 Although ophthalmology departments will usually be located in general out-patient departments, some parts of the ophthalmic service may be provided in the community. For example, some patients with diabetes and glaucoma may be monitored on a shared-care basis by optometrists working in community settings such as primary care/local healthcare centres. Community orthoptic services may also be based in such centres. The guidance in this HBN can be applied selectively to small-scale, community-based ophthalmic services.

1.4 Care has been taken to ensure that the guidance and recommendations for the accommodation described in this HBN are as economical and as flexible as possible without detriment to the standards required for the high quality care and treatment of ophthalmic patients.

Range of provision

Inclusions

1.5 The department described in this Supplement includes accommodation suitable for:

- adults and children;
- consultation and examination of people suffering from eye disorders who have been referred as out-patients by general practitioners, optometrists, community orthoptists or hospital consultants;
- undertaking investigative and diagnostic procedures, treatment and care.

Exclusions

1.6 This Supplement does not include guidance for accommodation for ophthalmic services provided:

a. in day case units;

b. by accident and emergency departments;

c. by dispensing opticians;

d. in highly-specialised supra-regional centres.

1.7 It is expected that most patients requiring major ophthalmic surgery under a local or general anaesthetic will be admitted to hospital as day patients and the procedures carried out in an operating theatre.

Capital Investment Manual

1.8 The Capital Investment Manual contains the NHS Executive's procedural framework governing the inception, planning, processing and control of individual health building schemes. There are various mandatory requirements within this overall process but the way these tasks are carried out is mainly for NHS trusts and health authorities (for directly managed units), as appropriate, to determine. Approval from the NHS Executive for business cases will depend on how they intend to carry out the mandatory tasks. The Manual gives guidance on the technical considerations of the full capital appraisal process and also provides a framework for establishing management arrangements to ensure that the benefits of every investment are identified, realised and evaluated. It emphasises three key points:

a. each individual scheme must be supported by a sound business case. A business case must convincingly demonstrate that the investment is economically sound (through an option appraisal) and financially viable (affordable to the trust and its purchasers);

b. an exploration of private finance alternatives must be viewed as a standard option whenever a capital scheme is being considered. Once the Outline Business Case has been approved, the preferred option should be compared to potential private finance alternatives. Approval to the Full Business Case will not be given unless there is a clear demonstration that private finance alternatives have been adequately tested;

c. the delivery of a major capital project is a difficult and complex task. Nevertheless, failure to deliver on time and to cost diverts resources from direct

patient care. The establishment of an appropriate project organisation is essential to ensure that projects are delivered within agreed budgets and timescales.

Cost allowances

1.9 The Departmental Cost Allowances associated with this HBN are promulgated in 'Quarterly Briefing' (issued separately under cover of an Estate Policy Letter) on behalf of the NHS Executive.

Equipment

1.10 Equipment is categorised into four groups, as follows:

a. Group 1: items (including engineering terminal outlets) supplied and fixed within the terms of the building contract;

b. Group 2: items which have space and/or building construction and/or engineering service requirements and are fixed within the terms of the building contract but supplied under arrangements separate from the building contract;

c. Group 3: as Group 2, but supplied and fixed (or placed in position) under arrangements separate from the building contract;

d. Group 4: items supplied under arrangements separate from the building contract, possibly with storage implications but otherwise having no effect on space or engineering service requirements.

1.11 Group 1 items are provided for in the Departmental Cost Allowances associated with this Note. The Department of Health Equipment Cost Allowance Guide (ECAG) specifies a sum of money for the functional unit for Groups 2 and 3; the ECAG does not cover Group 4.

Works Guidance Index

1.12 This volume indexes under subject references much of the relevant guidance that is current at the time of publication. Specific issues, such as arrangements for dealing with fire, security, energy conservation etc, are also covered by other published guidance which must be taken into account. It is recommended that project teams check the current edition of the Works Guidance Index and investigate the possibility of changes occurring since its publication.

2.0 General service considerations

Introduction

2.1 The main functions of an ophthalmology out-patients department are:

a. specialist consultation, examination and treatment in respect of eye disorders and diseases that do not require either daycase or in-patient activity;

b. pre-assessment of patients about to undergo daycase or in-patient treatment;

c. following up and monitoring the condition of patients who have received daycase or in-patient treatment;

d. discharging patients from the care of the hospital, with referral, if necessary, to other health services.

2.2 Out-patients attending an ophthalmology department:

a. are mainly ambulant;

b. may be of any age, with a predominance of the very young and elderly;

c. are frequently accompanied by an escort;

d. may be physically handicapped;

e. may be visually impaired.

2.3 The environment should be responsive to the needs of children, physically handicapped and visually impaired people. Many elderly, infirm and visually impaired patients arrive in wheelchairs, and access to all areas should be designed to accommodate these.

2.4 The majority of new patients attending the department are referred by general medical practitioners, optometrists, community orthoptists and other hospital consultants. A small number may be transferred from the accident and emergency department for more specialist treatment.

Organisation of the ophthalmic service

2.5 Ophthalmology can be divided into the following clinical specialties:

a. cataract;

b. glaucoma;

c. medical retinal;

d. cornea/external diseases;

e. oculoplastics;

f. paediatrics;

g. ocular motility;

h. vitreo retinal;

j. strabismus;

k. lacrimal;

l. orbital.

2.6 The paramedical services related to ophthalmology are:

a. orthoptics;

b. optometry;

c. low visual aid services;

d. ophthalmic (fluorescein) photography.

General and specialist clinics

2.7 Although ophthalmology departments may be managed in a variety of ways, most units will need to run both general and specialist clinics.

2.8 A general clinic is where all new patients will be received for assessment and initial consultation. It is often impossible to direct a patient straight to the relevant specialist clinic as the clinical information contained in a GP's letter may be insufficient. It will therefore be necessary to carry out basic tests such as recording of visual fields, taking intra-ocular pressures, and measuring visual acuity.

2.9 General clinics cover all those patients who can be dealt with in one visit. As this may include treatments involving minor surgical procedures, there should be easy access to the treatment room.

2.10 Those patients requiring further consultation and treatment will need to attend the appropriate specialist clinic, such as glaucoma, cataracts etc.

2.11 In larger departments it will be possible to run a general clinic and specialist clinics concurrently. This means that patients can be fully assessed and diagnosed in one visit. Smaller units, however, will probably not be able to run more than one or two clinics at any one time. Patients attending the general clinic may therefore need to return at a later date to visit a specialist clinic.

2.12 The relationship between general and specialist clinics is illustrated in Figure 1 (see Chapter 3).

Orthoptics

2.13 Orthoptics is a diagnostic, assessment, therapeutic and monitoring service for children and adults with eye muscle abnormalities and visual function problems. Because of the nature of this specialty, the orthoptic service can be accommodated in a self-contained area operating independently within the ophthalmology department. The reasons for this are as follows:

a. although orthoptic patients are always treated under the supervision of a consultant ophthalmologist, the patient will often need to see only the orthoptist;

b. the majority of orthoptic patients are children, who are best accommodated in a discrete area specially designed for their needs;

c. the orthoptic clinic may function as a base for a community orthoptic service.

2.14 This HBN describes a self-contained orthoptic clinic. However, in smaller departments or in local healthcare centres where space is limited and/or the number of orthoptic patients is not high, it may be more economical to provide an orthoptist's room within the general consulting/examination (c/e) area.

2.15 As refractive assessment of orthoptic patients will be carried out by an optometrist, orthoptic and optometry accommodation should be reasonably close geographically. The locational relationship of spaces in an orthoptic clinic is shown in Figure 1.

Optometry

2.16 Optometry is an assessment service for adults and children with visual impairment. It is concerned with the measurement of refractive error and the prescription of spectacles, contact lenses and sometimes low vision aids. In larger centres, assessment may include clinical psychophysical tests (for visual fields, colour vision, contrast sensitivity and dark adaptometry), ocular ultrasound biometry, scanning and ophthalmic electrodiagnosis.

2.17 Various spaces are required to accommodate the optometry service; these are described in Chapter 4. However, in small departments where the number of patients requiring the service is low and space is limited, it may be more economical to provide one multi-function optometry room for consultation, refraction, contact lens fitting and low vision aids (see paragraph 4.73).

2.18 While many of the vision assessment tests may be performed on the same day as a patient's attendance at the general (or one of the specialist) ophthalmology clinics, planning teams should note that most patients attending for low vision assessments will be either partially sighted or blind. Low vision clinics should therefore be easily accessible, and located close to the c/e suite as approximately 25–30% of patients re-attending for a low vision assessment will also have an immediate follow-on appointment in the general clinic (see also paragraph 3.4).

2.19 In many instances, for reasons of patient privacy and to ensure controlled local lighting levels, most of the optometry services are best conducted in separate rooms, although some sharing may be possible for assessment of the visual fields.

2.20 This HBN assumes that accommodation for optometry will be located in the main ophthalmic clinic for ease of use and efficient sharing of some spaces.

Sizing an ophthalmology department

2.21 The size of an ophthalmology department is determined by a range of factors:

- **Case mix:** except in specialist regional centres or outpost clinics, it can be expected that, on average, there will be one new referral for every four patients on a return visit. The reason for this is that glaucoma, medical retinal and paediatric work require long-term specialist follow-up and form a substantial proportion of the case load. Cataract and other surgically treated cases, such as retinal or oculoplastic disorders, may be discharged after only two or three visits.

  The ratio of first to return attenders is important because first referrals require more time for consultation than follow-up patients. High referral rates, for example in general clinics, can create peak demand.

  There is also a growing trend in ophthalmology for certain patients with diabetes and glaucoma to be monitored on a shared-care basis by optometrists working either in the hospital or in the community. Where shared-care programmes exist, it can be expected that for these specialties the number of return patient visits to the general clinic will reduce, and hence the ratio of new to re-attendance patients will increase.

  The case mix will therefore determine the ratio of first referrals to follow-up patients and will need to be established for each location.

- **Throughput:** the Royal College of Ophthalmologists has stated that junior doctors should not see more than 15 patients per clinic

session, and consultants are restricted to 13 patients per session. Since consultants will see first referrals and junior doctors will see the majority of return attenders and some new referrals under the consultant's supervision, throughput will be determined by the number of clinic sessions and the ratio of consultants to junior doctors.

Optimum throughput can be achieved by managing the smaller and larger clinics to minimise slack time (see Appendix B).

- **Clinic sessions:** there are normally nine or ten available sessions per week per clinic. The actual number will depend on the number of consultants, the size of the unit and the number of days on which clinics are operated.
- **Number of escorts:** most patients will be accompanied by a friend or relative who will need to be catered for, particularly with regard to support facilities such as waiting areas and toilets.

  Assuming that the consultation for a repeat visit takes 15 minutes, for each c/e space it is possible to have one patient being treated and a maximum of two patients waiting to remain below the Charter waiting standard of 30 minutes.

  An additional factor to be noted in calculating the amount of waiting time is that over half the patients in some clinics (all the patients in a retinal clinic) will be required to wait for a further 15–30 minutes after their initial consultation in order to allow time for pharmacological dilation of the pupils, so that an adequate retinal examination can be undertaken.

2.22 Appendix B provides a guide to calculating how many c/e rooms/bays will be required for a department with (a) 10,000 and (b) 45,000 out-patient attendances per annum.

Appointments system, reception and waiting

2.23 Apart from casualties, all consultations, examinations, tests and treatment in these clinics should be by appointment. The Patients' Charter states that patients should not have to wait more than half an hour for their consultation.

2.24 Waiting and other public areas should be quiet and pleasant, with proper facilities for patients with children, and for counselling worried patients and relatives.

2.25 Where possible, sub-waiting areas in corridors should be avoided by careful consideration of the planning arrangement.

2.26 The management of a patient's records will be determined by local policy. In many cases patient records may be stored in the central health records department and brought into the ophthalmology department for a patient's appointment, after which they will be returned.

Clinical management of patients

2.27 Clinical management of patients includes:

- examination, treatment, and monitoring which may involve computerised and manual techniques;
- visual field assessment;
- refraction;
- orthoptics;
- radiology;
- biometry;
- medical photography and imaging, including fluorescein angiography;
- ultrasound;
- laser treatment;
- minor surgery of the eye, for example the removal of eyelid cysts and ingrowing eyelashes. This may be carried out with the patient under local anaesthesia;
- nursing procedures, such as dressings, drops etc;
- the fitting of contact lenses and prostheses and the provision of low vision aids.

Accidents and emergencies

2.28 The treatment of ophthalmic accident and emergency patients will be determined by local policy. In departments where patients are seen by direct referral from GPs or as "walk-in" cases, dedicated eye care facilities will be required. This HBN assumes that patients with emergency ophthalmic problems will be seen initially in the general accident and emergency department. They will then transfer to the ophthalmology department where specialist staff and equipment are available.

Children's needs

2.29 'Welfare of Children and Young People in Hospital', 1991, highlights the importance of designing out-patient services for children in provider hospitals to ensure that scale, ambience and character are focused on the younger customer. This can be achieved either by designating a discrete area for children, with the appropriate staffing and equipment, or by running special clinic sessions for children only.

2.30 Where a project team elects not to separate children from adult patients, the environment of the ophthalmology department should take into account the large number of children attending. In addition, pre-school-age children may also be present when a parent is the out-patient.

2.31 Special care should be taken to ensure that children are not distressed by the sight and/or sound of patients undergoing treatment. Provision of appropriate waiting facilities is important, including a designated area where children can play.

2.32 One of the characteristics of ophthalmology is that the majority of child patients will be attending the orthoptic clinic for vision and squint assessment, and a large proportion of these will also attend the optometry clinics for refraction. Since children represent a large proportion of orthoptic patients, project teams should design this department specifically for children.

Future trends in ophthalmology

2.33 The trend towards more daycase surgery is likely to increase, leading to greater demands on ophthalmic facilities and greater throughput of patients. Demographic changes are also likely to be responsible for increased activity in eye departments as the proportion of elderly people in the population at large increases.

3.0 General functional and design requirements

Introduction

3.1 Chapter 3 of Health Building Note (HBN) 12 – 'Out-patients department', as modified by this chapter, provides general functional and design guidance on a range of topics which should be taken into account when designing ophthalmology departments.

Planning and design

3.2 Accommodation for ophthalmic services should be planned and designed to the same standard as that described in HBN 12 for general out-patient purposes.

3.3 Patients attending ophthalmology departments, particularly for the first time and for surgical treatment, may be apprehensive, and every effort should be made to reassure them. The general atmosphere in the department should be open, pleasant and friendly; this will help both patients and staff feel at ease. Furnishings and lighting should contribute to creating a relaxed and comfortable environment.

3.4 The department should preferably be located on the ground floor close to an entrance, or main entrance, thus avoiding the need for elderly and partially sighted people having to travel too far into the hospital building complex.

Location and relationships

3.5 There are three possibilities for the location of an ophthalmology out-patients department:

a. within the overall curtilage of the general out-patients department (OPD) of an acute general hospital;

b. as a stand-alone clinic within an acute general hospital;

c. as a stand-alone clinic within the community and apart from the acute general hospital.

Clinic opening hours

3.6 Consideration should be given to providing evening or weekend sessions which may be more convenient for some patients and, at the same time, improve the utilisation of capital resources. If normal clinic hours are extended, attention will also need to be given to the availability of support services and facilities, and to the need for security, cleaning and maintenance.

Accommodation in an ophthalmology department

3.7 The locational relationship of spaces required in an ophthalmology out-patients department is shown in Figure 1.

3.8 Specific spaces in an ophthalmology department which are not described in HBN 12 are:

a. vision testing spaces;

b. visual fields test room;

c. consulting/examination suite;

d. ultrasound room;

e. laser treatment room;

f. photography room;

g. darkroom;

h. treatment room;

j. recovery room;

k. low vision assessment room;

m. refraction/contact lens room;

n. psychophysical and electrophysiology tests room;

p. prosthetics room;

q. consulting/examination suite – orthoptics;

r. special examination room.

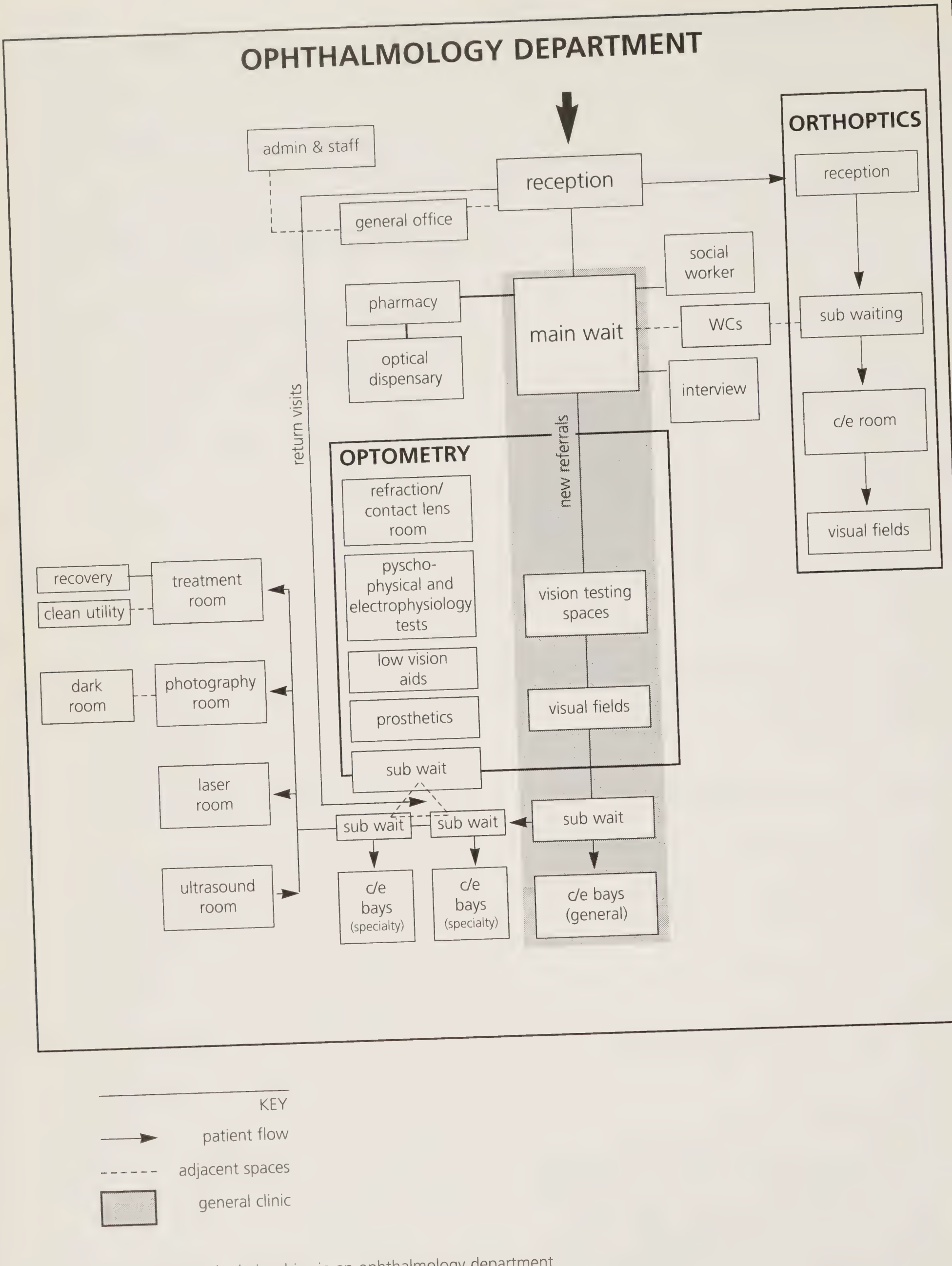


Figure 1 Locational relationships in an ophthalmology department

Access for disabled people

3.9 It is essential to ensure that suitable access and facilities are provided for people who have problems of mobility or orientation or other special needs. This category includes, besides people who are wheelchair-bound, those who for any reason have difficulty in walking, those with a sensory handicap such as visual or hearing impairment, and those whose first language is not English. Project teams are reminded of the need to comply with the provisions of:

a. the Chronically Sick and Disabled Persons Act 1970 (and Northern Ireland 1978);

b. the Chronically Sick and Disabled Persons (Amendment) Act 1976;

c. the Disabled Persons Act 1981 (and Northern Ireland 1989);

d. the Disabled Persons (Services, Consultation and Representation) Act 1986;

e. Department of the Environment Approved Document M (1992) to the Building Regulations 1991;

f. the Disability Discrimination Act 1995.

3.10 Attention is drawn to BS5810: 1979 'Code of Practice for Access for the Disabled to Buildings' (under review). One of the effects of the 1981 Act is to apply this British Standard to premises covered by the 1970 Act, which includes those open to the public. Practical guidance for complying with the Building Regulations is issued by the Department of the Environment under Approved Document M: 'Access and facilities for disabled people'.

3.11 Project teams should refer to HFN 14 – 'Disability access', and to HBN 40 – 'Common activity spaces' – a set of four volumes which includes guidance and ergonomic data sheets on access, space and equipment relating to disabled users of health buildings, including the visually impaired.

3.12 It is recommended that project teams consult local representatives of disabled people, the Centre for Accessible Environments, the RNIB and other bodies, with regard to the planning of spaces used by patients and escorts.

3.13 In locations where public telephones are provided, one should be mounted at a height suitable for use by a person in a wheelchair and the handset fitted with an inductive coupler to assist any person using a hearing aid. See also HBN 48 – 'Telephone services'.

Circulation and orientation for the visually impaired

General requirements

3.14 Many ophthalmic out-patients may be partially sighted (temporarily or permanently) or even totally blind. In order to help these patients find their way around independently, the department design should be based on the following requirements:

a. a simple and well-planned layout;

b. even surfaces with tactile indications of direction;

c. no obstructions in walking areas;

d. well-lit areas;

e. signs placed at a convenient height, with space to stand in front to read them.

3.15 Radiators and fire extinguishers should be recessed. Radiators should have low surface temperatures, as visually impaired patients tend to use them to steady themselves. If this is difficult to achieve, radiators should have protective grilles. Refer also to paragraph 6.21.

Signposting

3.16 Signs are an integral part of enhancing the accessibility and usability of the department, and should be used effectively and sparingly to identify circulation directions, rooms, spaces, amenities, accessible entrances, emergency information, and also to indicate where help may be available, etc. Any signs used should follow the RNIB/GDBA Joint Mobility Unit guidelines.

3.17 Factors such as the location of signs, size and type of characters, colour/tone contrast of text with background and background with wall surface, the use of tactile embossed lettering and general good standards and levels of lighting, will all enable visually impaired people to find their way independently. In addition, a contrasting sightline painted on the wall 1 m above ground level can help patients to find their way around the department.

3.18 Clear, audible information can also be a help. Although few visually impaired people read Braille, this could be utilised in some areas where there are known to be more Braille users.

3.19 In areas where assistance is provided for visually impaired people, the relevant internationally recognised symbol should be incorporated into the signage for those areas.

3.20 For detailed guidance on the size, location and illumination of signs, project teams should refer to Volume 1 of HBN 40 – 'Common activity spaces'.

Information management and technology

3.21 Information management and technology (IM&T) is fundamental to the successful operation of an ophthalmology department. The system selected should offer a wide range of facilities, and be consistent with local and NHS IM&T strategies. Details may be obtained from the Publishing Department, Department of Health Distribution Centre, PO Box 410, Wetherby, West Yorks, LS23 7LN. For IM&T strategies in Northern Ireland, contact HPSS Directorate of Information Systems, Centre House, 79 Chichester Street, Belfast BT1 4JR. A national overview of the trend towards networking and data communication networking systems is contained in 'A strategy for NHS-wide networking' which may be obtained from the NHS Executive. More detailed guidance on local area networks (LANs) is contained in the NHS IT Standards Handbook Volume 2, which may also be obtained from the NHS Executive.

3.22 Consideration should be given to direct communication, for example by fax machine or computer links between ophthalmology departments and GP surgeries and between ophthalmology and other hospital departments, and other hospitals.

3.23 Developments in telemedicine may require transmission of video/ECG/X-ray/scanner images between ophthalmology departments and centres of specialist expertise in other hospitals.

3.24 Figure 2 illustrates a comprehensive IM&T network for an ophthalmology department. A glossary which explains the meaning of the terms used in the figure is included as Appendix C. However, choice of systems and matters such as the location of computer terminals, which functions to include on the system, and access levels to information, should be determined locally. Examples of data handling needs which would be met by installation of a network such as that shown in Figure 2 include:

- within the department:
  - (i) making appointments for first-time attenders;
  - (ii) maintaining the appointment system for return attenders;
  - (iii) operating a patient management system;
  - (iv) maintaining patient records;
  - (v) providing management information, including clinical audit;
  - (vi) managing materials, including stock control of medical stores and other consumables such as low vision optical aids;
  - (vii) managing statistical information, including feedback from patients, general practitioners and community nurses;
  - (viii) storing reference material;
- with other hospital departments:
  - (i) receiving urgent results from the pathology department;
  - (ii) receiving radiological images;
- with patients:
  - (i) confirming appointments for return attenders;
  - (ii) final checking that return attenders still plan to attend;
- with GP, advising of attendance and requesting follow-up visit;
- with community nurse, requesting visit after attendance at the department;
- with hospital social worker, requesting follow-up of rehabilitation services for blind or partially sighted patients.

3.25 Project teams should:

a. consider the IM&T needs of the department at an early stage;

b. review current IM&T developments;

c. check that proposals conform with local IM&T policies;

d. ensure that sufficient space is provided at the design stage to meet the anticipated need for special power supplies, modems, visual display terminals (VDTs), printers and associated software, stationery, and conduits for cables;

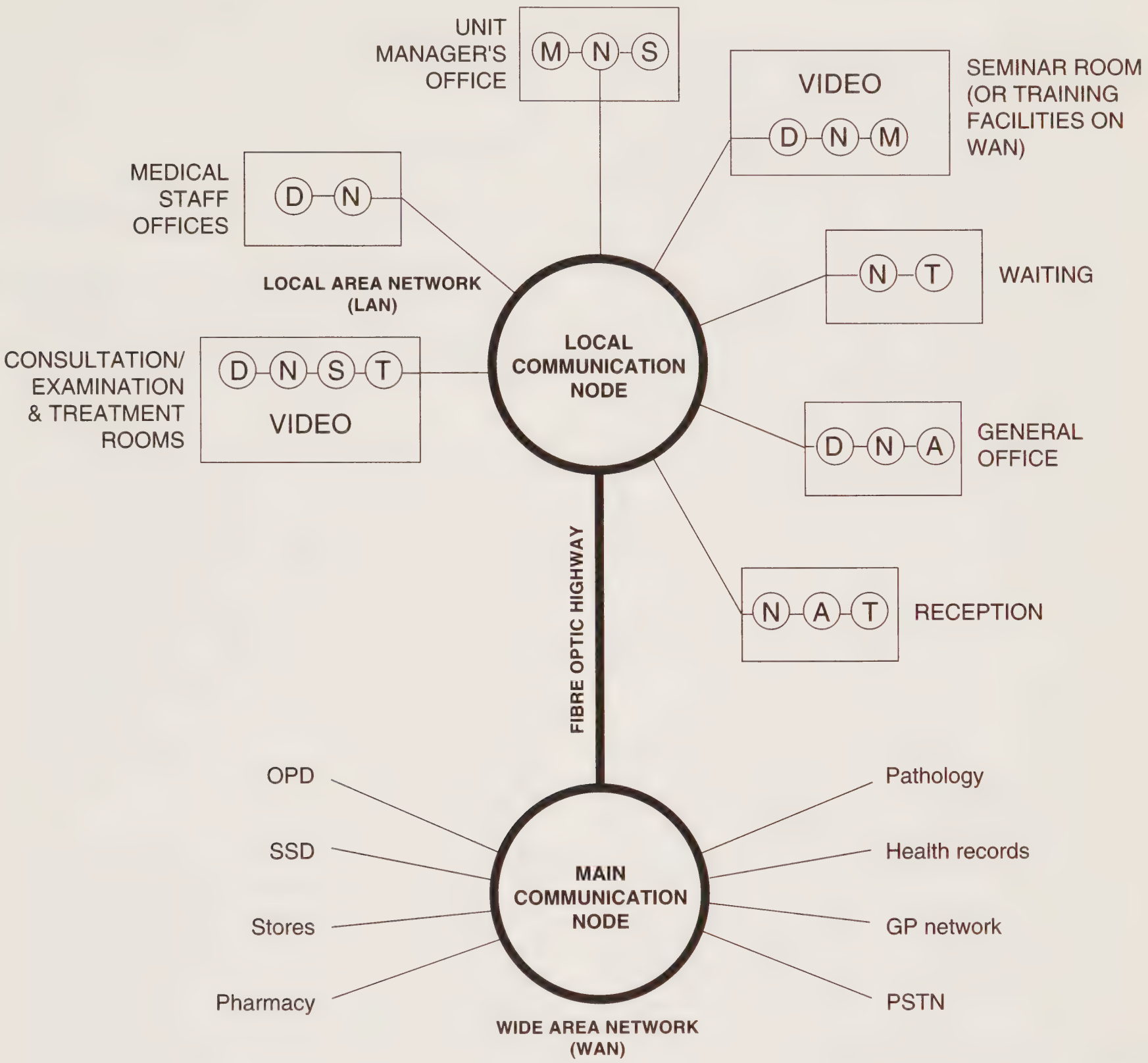
e. where necessary and if a suitable space is not available elsewhere, ensure that a room is provided within the department to accommodate the IM&T equipment. The space requirements, temperature limits etc should be obtained from the equipment manufacturer;

f. ensure that VDT screens are sited so that the displayed text is not visible to members of the public (although it may be considered an advantage to be able to turn the screen to enable the patient to check the accuracy of the information entered);

g. ensure that the contents of the VDT screen are legible (see paragraph 6.51);

h. ensure that equipment noise is controlled within acceptable limits and, where necessary, fit acoustic hoods or locate the equipment in a separate room;

Figure 1 Data and telephony network diagram – consistent with NHS Information Management and Technology Strategy



Key to data and telephony station functions

Each station will have provision for IT and telephones

(D)octor

- Appointments
- Clinical coding
- Electronic mail
- GP contact
- Health records
- Medical audit
- Orders
- Reference material
- Results
- Word processing

(N)urse

- Appointments
- Care planning
- Community contact
- Electronic mail
- Health records
- Orders
- Patient assessment
- Results

(M)anager

- Contracting
- Decision support
- Electronic mail
- Non-clinical orders
- Stats/ activity analysis
- Word processing

(A)dministration

- Appointments
- Electronic mail
- Health records
- Non-clinical orders
- Word processing

(S)tock

- Patients appliances
- Pharmacy
- SSD
- Stores

(T)racking patients

j. ensure that adequate provision is made for the security of data and devices.

Art in health buildings

3.26 Works of art and craft can make a significant contribution towards the required standard of the interior of a department: this need not be limited to the conventional hanging of pictures on a wall. Every opportunity should be taken to include works by artists and craftspeople in appropriate spaces in the department. These may include paintings, murals, prints, photographs, sculptures, decorative tiles, ceramics, textile hangings and furniture. It is important to ensure that art and craft can be appreciated by visually impaired people; planning teams should consider the provision of tactile art, such as sculptures, and the use of bright, contrasting colours in pictures and print. There is a body of research indicating that the style of art is important. Happy, smiling faces, views of nature and water scenes are more likely to have a calming, therapeutic effect than strident, sombre or abstract scenes, which may induce stress.

3.27 Often it is works of art and craft which lend special identity to a waiting area or recovery room, and which help give a sense of locality.

3.28 Advice should be sought from experts on:

a. obtaining grants. In some cases, Regional Arts Boards or charitable trusts with a local interest may offer grants to add money within a capital scheme which is set aside for art or craft works. The Royal Society of Arts offers bursaries for collaborations between architects and artists;

b. obtaining sponsorship. Local industries may see an advantage in supporting an arts project as a way of reaching a wide, or particular, audience.

Natural and artificial lighting

3.29 Ophthalmic investigations usually require low levels of background lighting, many units being designed deliberately without external windows to avoid glare problems. Whenever windows are provided they will almost certainly require full blackout facilities. In most cases, lighting will need to be dimmable.

3.30 Artificial lighting should have good colour rendering properties and conform to the CIBSE recommendations. Special consideration should be given to the work of the ocular prosthetist where fine colour matching is a requirement.

3.31 The provision of skirting-level lighting will help to prevent patients tripping over equipment in c/e bays and treatment areas.

3.32 The needs of staff should be borne in mind, however, as working in a totally enclosed environment all day is undesirable. Access to staff facilities which have windows might be an option.

Telephones

3.33 Telephones should be provided in accordance with the needs of the department. Ringing telephones in and adjacent to consulting/examination/treatment spaces are a particular nuisance at any time, and consideration should be given to the installation of a telephone system which will enable any incoming calls to be intercepted at an appropriate location – for example, the reception desk.

3.34 Unnecessary or abortive staff movement can be reduced by the provision of an intercommunication system; this should utilise the standard telephone network, be simple to use, and cover all locations of high staff activity. Such a system can accommodate a wide range of functions, both routine and emergency, and can enable staff to communicate rapidly when they require assistance. For example, the facility can be used for emergency calls for assistance in cases of clinical need where the patient cannot be left alone. The facility can also be used to contact another department easily and quickly, or to locate a member of staff elsewhere in the department.

3.35 Public telephones will be required for the use of patients, their escorts and visitors, preferably in a convenient and accessible location in, or near to, the main entrance and/or waiting area. Reference should be made to paragraph 3.13 above with regard to the provision of public telephones for disabled people. Further guidance is contained in HBN 48 – 'Telephone services'.

Internal environmental engineering considerations

Ventilation

3.36 The majority of spaces in an ophthalmology department will either be internal or will require blackout facilities, and will therefore need to be mechanically ventilated. Natural ventilation is the preferred option in non-clinical spaces such as administrative offices, staff rooms, teaching areas etc.

3.37 Mechanical ventilation will also be required in c/e spaces where large pieces of equipment tend to generate heat.

Noise and sound attenuation

3.38 Any unwanted sound is a noise and may disturb patients and staff. Noise-sensitive areas should be located as remotely as possible from internal and external sources of unavoidable noise.

3.39 Care must be taken to ensure that mechanical ventilation is silent.

3.40 Speech privacy is essential in spaces where personal and confidential discussions are held, such as interview rooms and consulting/examination/treatment spaces; it should not be possible to overhear any discussions taking place in adjoining spaces.

3.41 Particular care should be taken where the adjoining spaces are waiting areas.

3.42 In the c/e suite of open bays, sound transmission can be reduced by use of sound-attenuating partitions and doors. Use of soft floor-coverings, provision of curtains and acoustic treatment of walls and ceilings (where hygienically acceptable) will improve sound absorption in a space.

Finishes

3.43 The quality of finishes in all areas should be of a high standard; the cost allowance gives due recognition to this need. Guidance on the selection of finishes is provided in the relevant Health Technical Memoranda (HTMs), listed in the References section.

3.44 Finishes should be robust enough to withstand accidental impact, and additional protection should be provided at likely points of contact. Trolleys, wheelchairs and items of mobile equipment which may cause damage should be appropriately buffered. Refer to HTM 69 – 'Protection'.

Colour

3.45 The colours of surfaces in spaces occupied by patients should not distort the colour rendering of light sources. It must be possible to clearly define and easily identify any changes to a patient's skin tone and colour (see also paragraphs 3.30 and 6.45 to 6.54).

3.46 Decor colours should be light and pleasant. Strong, contrasting colours may also be used to help visually impaired patients find their way around. For example, grabrails and door handles should be in strong contrast to the background colour. If different clinical areas are colour-coded, highly saturated colours should be used on readily identifiable features such as doors, skirting etc.

Floors

3.47 Floor coverings and skirtings should contribute to the provision of a non-clinical environment, yet at the same time, be hardwearing. They must not present a hazard to the visually impaired, nor should they restrict the movement of wheeled equipment. Floors should not be (nor appear to be) slippery, and the floor patterning should not induce disorientation. Changes of floor level should be avoided wherever possible. Surface drag, static electricity, flammability, infection hazards and impermeability to fluids have also to be considered. HTM 61 – 'Flooring' should be consulted for advice on user requirements and performance selection. General guidance is also provided in HFN 14 – 'Disability access'.

3.48 Many items of clinical equipment are free-standing and moveable. Care should be taken to ensure that trailing electrical cables do not present a hazard, especially in c/e bays where the mean illumination level is low.

3.49 Finishes should be appropriate for the activities to be carried out, restricted in variety for ease of cleaning, and compatible with agreed cleaning routines.

Doors and frames

3.50 Doors and frames are particularly liable to damage from mobile equipment, and materials which will withstand this should be used. All double swing-doors should incorporate clear glass vision panels, but privacy, safety or other considerations may require that the panels should be capable of being obscured. Where necessary, doors should be capable of being fastened in the "open" position. Magnetic door retainers should not restrict the movement of traffic. Refer to HTM 58 – 'Internal doorsets'.

Windows

3.51 In addition to the various statutory requirements, the following aspects require consideration: illumination and ventilation; insulation against noise; user comfort; energy conservation; the prevention of glare; the provision of a visual link with the outside world. Windows should have a pleasant outlook if possible.

3.52 Ophthalmic investigations usually require low levels of background lighting, and in some cases clinical areas may be designed deliberately without external windows. Where windows are provided in clinical areas, however, they will almost certainly require blackout facilities.

Consideration should be given to the problems of heat gain between the glazing and blackout blind.

3.53 Design should ensure that it is possible for cleaners to have easy access to the inside and outside of windows. Guidance on types of window and on the safety aspects is available in HTM 55 – 'Windows'.

Maintenance and cleaning

3.54 Materials and finishes should be selected to minimise maintenance and be compatible with their intended function. Building elements that require frequent redecoration or are difficult to service or clean should be avoided. Special design consideration should be given to corners, partitions, counters and other elements which may be subjected to heavy use. Wall coverings should be chosen with cleaning in mind. Guidance on these aspects is given in HTM 56 – 'Partitions', HTM 58 – 'Internal doorsets', and HTM 61 – 'Flooring'.

3.55 In liaison with local authorities, consideration may need to be given to the provision of a dedicated bin store.

4.0 Specific functional and design requirements

Introduction

4.1 This chapter should be read in conjunction with HBN 12 'Out-patients department' for the description of general out-patients department (OPD) accommodation. The specific functional and design requirements for spaces in the ophthalmology department are described below. This HBN assumes that optometry patients will attend the main ophthalmic clinic. Accommodation for orthoptics has been grouped together in a separate orthoptic clinic described at the end of this chapter.

4.2 Lists of activities and equipment, and details of environmental conditions and finishes of walls, floors and ceilings are presented in the activity data sheets (see Chapter 8 of this Supplement and Chapter 8 of HBN 12).

OPHTHALMIC CLINIC

Patient reception spaces

Reception desk

4.3 A reception desk is required where:

a. patients can be received and registered;

b. re-appointments, and appointments with other clinics, can be made;

c. telephone(s) and computer terminal(s) may be used.

4.4 The reception desk should be open with at least one part at low level for easy communication with children, seated patients or patients in wheelchairs. If more than one patient can be received at any one time, the distance between receptionists should be sufficient to allow auditory privacy. This will be particularly necessary if the patient is required to give medical history details to the receptionist, and planning teams may wish to consider the provision of privacy screens, making adequate allowance for escorts, children and siblings.

4.5 The reception desk should be located adjacent to the main waiting area to enable reception staff to observe the patients waiting. It should be supported by the general office (see paragraph 4.93).

Main waiting area

4.6 The waiting area should provide a comfortable and relaxing environment with domestic-style finishes and furnishings. It should be adjacent to the reception desk and have easy access to the vision testing spaces and c/e suite. WCs should be available nearby.

4.7 There should be a variety of seating and adequate space for patients in wheelchairs. Seating should not be placed immediately outside c/e rooms. The provision of movable chairs will enable the waiting area to be used flexibly, although care should be taken to ensure that chairs do not become a hazard to the visually impaired. Chairs and other furniture which have a high colour contrast against the floor will be more easily recognised by visually impaired people.

4.8 The size of the waiting area is affected by:

a. the number of patients attending the department;

b. the number of escorts and where they wait;

c. the number of patients in wheelchairs.

4.9 A variety of reading material should be available, some in large print. Project teams may also wish to consider the provision of low-level background music and/or a video system. This may help patients to relax, alleviate the boredom of waiting, particularly for children, and mask confidential discussions.

Children's play space (and push-chair park)

4.10 A play space should be provided for children who are patients or who are accompanying adult patients. Young children should be able to play or read in safety without disturbing adult patients.

4.11 The play space should be located:

a. so that playing children can be easily supervised by adults in the clinic waiting area;

b. as close as possible to the nappy changing room.

4.12 A small parking space or store for push-chairs should be provided.

WCs

4.13 WC facilities for patients, their escorts and staff should be provided close to the main waiting area.

WC for disabled people/nappy changing facilities

4.14 A WC with a hand-wash basin, easily accessible from the main waiting area, should be provided for use by disabled people. For reasons of economy, this space may also include facilities for changing a baby's nappy, such as a wall-mounted, pull-down worktop, and facilities for the disposal of soiled nappies. The worktop will also provide a safe place to put a baby while the parent uses the toilet.

Specimen WC

4.15 A specimen WC, with wheelchair access and a hand-wash basin, should be provided close to the main waiting area and adjacent to the dirty utility. A hatch should be provided to enable urine specimens to be passed from the WC to the dirty utility room.

Pharmacy

4.16 A dispensing pharmacy is required for storage and dispensing of previously prepared medications for ophthalmic patients. For smaller ophthalmology departments it is anticipated that this accommodation will be shared with other users and may be sited outside the department. In larger departments, it may be preferable to site the facility within the department. This will be a matter for project decision.

4.17 The pharmacy will require shelving and refrigerators for drug storage, an order preparation counter, a securable reception desk and a small office for the pharmacist and other staff to carry out administrative duties. The pharmacy should be fully secured when not in use.

4.18 The pharmacy is listed as essential complementary accommodation in the schedule of accommodation (see Chapter 7).

Optical dispensary

4.19 Large ophthalmology departments may wish to consider extending the optometry service to include an optical dispensary. This optional service will include dispensing of spectacles and minor frame repairs. The room requires a display area for spectacle frames, an area for measuring a patient's facial characteristics, storage space for frame stock and an area for checking lens prescriptions and performing minor frame repairs. The optical dispensary should be sited close to the entrance to the department so that patients using the service do not need to enter clinical areas.

Sub-waiting area

4.20 Sub-waiting areas are required in large departments where general and specialist clinics are running concurrently. Patients will transfer to the sub-waiting area following their pre-consultation assessment tests. Many patients require the insertion of eye drops to dilate their pupils and will need to return to the sub-waiting area during their consultation to wait for the eye drops to take effect. Such patients will have blurred vision and may experience difficulty in finding their way back to the c/e bay. Sub-waiting areas must therefore be located immediately adjacent to c/e bays.

4.21 Sub-waiting areas may be either separate or shared between clinics. Separate areas offer a greater degree of privacy whereas shared areas can be used more flexibly. The design of sub-waiting areas is a matter for local decision.

4.22 A children's play space should be provided in each sub-waiting area, although in some cases it may be possible for adjacent waiting areas to share play space. Refer to paragraph 4.10.

Consulting/examination and treatment spaces

Staff base

4.23 A small staff base is required to act as a focal point for the management of the treatment area and to oversee patients awaiting treatment and those resting in the recovery room. Administrative tasks will also be carried out here. The staff base should ideally be located so that visual communication with the reception desk is possible.

Vision testing spaces

4.24 Depending on local operational policy, planning teams may wish to consider the provision of testing spaces. The spaces can be used to perform routine assessment tests, such as visual acuity, prior to consultation. They should be located adjacent to the main waiting area and c/e suite.

4.25 The design of the vision testing area will be determined by the space available. Spaces containing a reverse 3 m Snellen test and mirror offer a more flexible design as they may be adapted for use as c/e space. An alternative, although less flexible, solution is a vision testing channel accommodating a distance test of 6 m. The Snellen chart will be placed on the wall at one end of the channel, with the patient standing to take the test at the opposite end.

4.26 Vision testing spaces are optional (refer to paragraph 7.16).

Visual fields test room

4.27 Patients undertaking visual fields tests may be supervised by a nurse, orthoptist or optometrist.

4.28 Each room should contain one or two visual fields testing machines and an adjustable height patient's chair for each machine. Lighting should be diffuse and controllable by a dimmer from the door and desk. The provision of skirting-level lighting should be considered in rooms containing more than one item of field testing equipment as patients are likely to have to enter the room under low illumination.

4.29 Medical staff will require a desk, a pedestal drawer unit for storing small items of stationery, a mobile desk chair, and an angle-poise lamp.

4.30 The visual fields tests are also part of the pre-assessment work-up and should be located in the optometry area and in close proximity to the waiting area and c/e suite.

Consulting/examination suite

4.31 A consulting/examination (c/e) suite for ophthalmology comprises a c/e room for the consultant supervising the clinic session and a number of supporting c/e spaces for other ophthalmic medical staff. In larger departments with more than one consultant, at least two suites or "clinics" will be required. (For guidance on calculating the total number of c/e suites required, refer to Appendix B.)

4.32 Supporting c/e spaces may be either rooms or bays. Rooms have the advantage of offering complete privacy for the patient. However, the provision of adjacent bays separated by privacy screens containing a glass panel will allow visual communication between the consultant and other medical staff, and will ensure ease of staff movement between the bays, while still offering a degree of privacy for patients. This HBN describes a c/e suite comprising one room and a number of supporting bays. This model is illustrated in Figure 3, overleaf.

4.33 Each clinic is separated from its sub-waiting area by a wall. Patients enter and exit a c/e bay via a door, leaving the opposite, partially open end of the bay to be used by staff. Locating two clinics together, as indicated in Figure 3, will enable some sharing of spaces between clinics.

4.34 Patients may be accompanied by one or more escorts, so plenty of stackable chairs should be available in all c/e bays and rooms, although care should be taken to ensure that these do not present a hazard to the visually impaired.

4.35 The first part of a consultation with a new patient will consist of personal medical history taking, and a desk and computer in each c/e room/bay will be required for this purpose. Depending on local policy, the notes to the record may be entered directly onto the computer by either the clinician or the nursing staff. This will provide speedy consistent records, instantly available elsewhere in the department to other professionals where another visit is programmed for the same day, or to a secretary for the generation of letters to referring practitioners. There should be adequate space for the computer and associated equipment, as well as wall racks for storing leaflets and forms.

4.36 The doctor's desk chair should be mobile and height adjustable as he will move across to the patient to carry out an examination using the slit lamp.

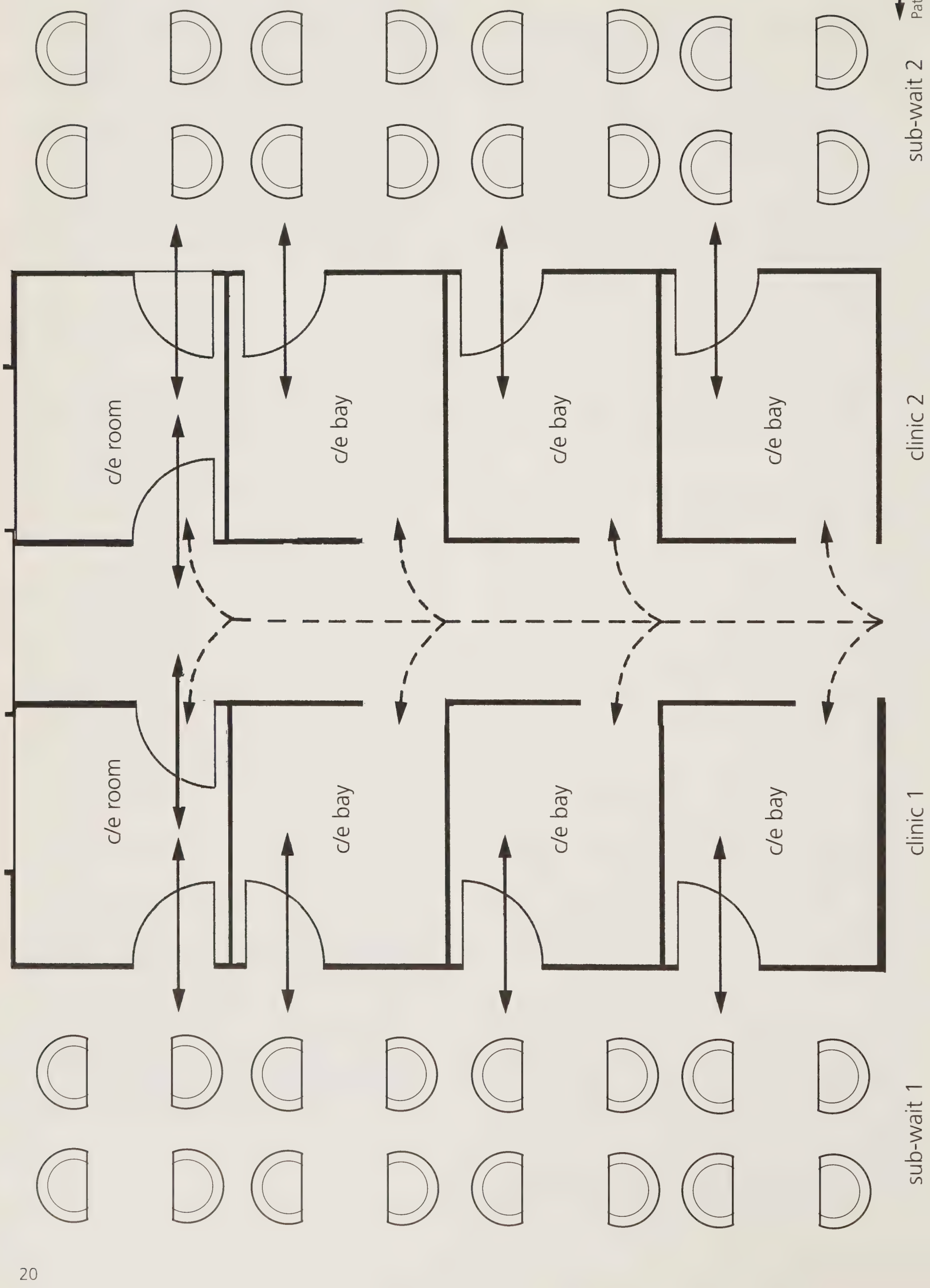
4.37 In ophthalmology departments where there is no optometry service, the clinical procedure of refraction will need to be performed in the c/e room/bay. This will require a reversed Snellen chart and mirror combination to provide a total viewing distance of 6 m.

4.38 In contrast to other out-patient departments, ophthalmic patients do not usually have to undress for an examination. The provision of a couch with curtain screening is therefore unnecessary in all c/e spaces, although access to at least one c/e room containing a couch is required. Indirect ophthalmoscopy examinations, especially in retinal clinics, require the patient to be in a supine position. In addition, patients need to be examined from both sides of the head and from above the head. The patient should therefore be seated in a reclining treatment chair. Project teams should be careful to ensure that some bays can be accessed by patients in wheelchairs.

4.39 When the patient is seated in the treatment chair, the doctor will be able to:

- take the patient's history;
- undertake refractions using the reverse Snellen's test apparatus with a mirror;
- examine the eye using a hand-held ophthalmoscope;
- carry out indirect ophthalmoscopy examinations with the patient in a supine position;
- examine the eye by means of a slit lamp.

Figure 3 Exemplar layout: consulting/examination suite



4.40 The slit lamp should preferably be mounted on a specially constructed pendulum table. The slit lamp may then be swung across the patient's lap when they are seated upright and the doctor can be seated in front of the lamp. Ancillary equipment should be within easy reach of the doctor so that further investigations can be carried out with the minimum of inconvenience; the lens case, for instance, could be mounted on an adjustable arm and attached to the pendulum table. An X-ray viewer should be provided.

Treatment room

4.41 A treatment room is a multi-purpose room where ophthalmic staff can perform minor operations, dressings and investigations.

4.42 The treatment room will be appropriate for procedures which:

a. require a more sophisticated environment than the c/e room, for example more space or specialised equipment;

b. do not require general anaesthesia;

c. may be performed in a naturally ventilated environment.

4.43 Most patients will walk into the treatment room and climb onto the table, trolley or reclining treatment chair. Facilities will be required for patients to hang up outdoor clothing, and a suitable surface should be available for any other items of clothing which they may need to remove.

4.44 Specific equipment requirements will be determined by the particular procedures performed, but a microscope will be required for most treatments. If intravenous sedation is used, patients will need a trolley on which to recover. Resuscitation equipment, including oxygen and suction, should be provided. An X-ray viewer is also required.

4.45 The room should have natural daylight, with diffuse artificial lighting. An examination light over the treatment chair/table will be required, as well as downlights over work surfaces. Lighting should be switched from the door and locally.

4.46 The treatment room should be located adjacent to the recovery room and in close proximity to the clean and dirty utility rooms.

Recovery room

4.47 A recovery room is required where patients can recover or rest prior to leaving the department. Patients may transfer from the treatment room to the recovery room on a trolley, in a wheelchair or on foot. The two rooms should be located close to each other.

4.48 Access to the recovery room will also be required for patients undergoing laser treatment and fluorescein angiography photography.

4.49 The recovery room should be furnished like a domestic lounge, with space for a trolley, a mixture of reclining and conventional easy chairs and an occasional table. A supply of current reading matter should be available. Escorts may join patients for the recovery period. A drinking fountain, or simple beverage-making facilities, should be provided in the recovery room.

4.50 In small departments where patient throughput is lower, patients may remain in the treatment room for the recovery period. A recovery room is therefore listed as optional for departments of 10,000 attendances per annum.

Ultrasound room

4.51 The ultrasound room is essential complementary accommodation. If provided in the department, it should be located in close proximity to the c/e suite. This room will also need to contain a reclining treatment chair, but should also be able to accommodate patients in wheelchairs or on trolleys.

4.52 Lighting levels should be low, with dimming facilities and spotlights. If the room contains an outside window, blackout facilities, mechanical ventilation or a light-tight ventilator in the wall should be provided.

Laser treatment room

4.53 This space is a clinical facility for laser treatment to be carried out through a slit lamp microscope. If provided within the ophthalmology department, it should be in close proximity to the c/e suite, ultrasound facilities and recovery room. It is essential complementary accommodation.

4.54 Laser equipment may include an argon laser for repairing retinal damage, and/or an Nd:YAG laser for cataract treatment. The room should contain a reclining treatment chair, a mobile, adjustable-height chair or stool for the doctor, a desk, a shelf for notes, an X-ray viewer and a hand-wash basin with wrist-operated taps.

4.55 The room should be internal and mechanically ventilated. The lighting should be diffuse fluorescent, with switching at the door and next to the laser. A wall-mounted angle-poise lamp is required for work at the laser.

4.56 An intercom, as well as an emergency nurse call button, is required. Access to resuscitation equipment, including oxygen and suction, is also required.

4.57 Due to the nature of the treatment, the door to the laser room should be lockable from the inside. A sign with the wording "Laser treatment room" should be mounted on the door, and an illuminated sign warning "Treatment in progress, do not enter" should also be located on the wall next to the door.

Photography room

4.58 The ophthalmology department will require photographic facilities for diagnostic purposes. The photography service may be located in the department or elsewhere in the hospital, but should be adjacent to the darkroom if provided. It is essential complementary accommodation.

4.59 Equipment for both anterior segment and retinal photography is required. The most common form of ophthalmic photography is fluorescein angiography. This is carried out with a Fundus camera, which may be mounted on a pendulum table. The patient and doctor will be seated on mobile, variable-height stools while the photographs are taken.

4.60 During the fluorescein angiography procedure, the patient receives an injection. Equipment for first stage resuscitation must be available for use in the event of a patient's collapse, and a method for summoning the cardiac arrest team should be provided. This could be achieved via the staff emergency call system. Access to the recovery room is required.

4.61 In addition to the photographic equipment, a desk and shelf space will be required for administrative duties and storing notes. A lockable cupboard for storing drugs should also be provided. A hand-wash basin is required.

4.62 Blackout facilities are required for windows. The general lighting should be diffuse and dimmer-controllable at the door and in the photographic area.

4.63 A sign with the wording "Ophthalmic photography room" should be mounted on the door, and an illuminated sign warning "Photography in progress" should also be located on the wall next to the door.

Darkroom

4.64 Technological advances in medical photography now mean that most images are digitised. The demand for conventional processing of photographic film is therefore decreasing. However, images of the front of the eye, such as those taken with the cornea camera, need to be in colour. Colour digitising is extremely expensive and it may be more economical to produce these photographs conventionally, either on site or using a commercial film processing firm. A darkroom is essential complementary accommodation.

4.65 In on-site darkrooms, the film processor should be positioned so that the "feed-in" end is in the safe-lit area and the "output" end in the adjacent viewing, checking and preliminary reporting area. When the door is closed, magazines and cine-cassettes may be passed into the darkroom via a cassette hatch. There will be a need for safe-lighting (coupled to an exterior warning light), a white light, bench space for unloading and loading cassettes, and cupboards for storage.

Low vision assessment room

4.66 Low vision assessment forms an essential part of the optometry service. The room will contain a range of special low vision aids, usually stored in cupboards. A 3.5 m viewing distance with a mirror is required. All patients attending for low vision assessment will be visually impaired and a large number will be partially sighted or blind. This room must be as easily accessible as possible and should preferably be located close to the entrance to the department.

4.67 The low vision assessment room is listed as optional for small departments as this service may be accommodated more economically in a multi-purpose optometry room (refer to paragraph 4.73).

Refraction/contact lens room

4.68 Activities in this room include refraction of the eye and the fitting of contact lenses. The latter will require the use of a bi-microscope slit lamp, a keratometer and possibly a corneal topogometer.

4.69 Storage space for a range of contact lenses, plus a 3.5 m viewing distance with reversed Snellen chart and mirror are required. A patient's couch will be necessary if young babies are to be fitted with contact lenses. An area for chemical cleaning and autoclaving of contact lenses, and hand wash facilities are required. Seating to accommodate a patient and escort should be provided.

4.70 The provision a refraction/contact lens room will depend on operational policy. For example, if refraction is carried out in the consulting/examination suite and contact lens fitting takes place in the low vision assessment room, a separate refraction/contact lens room will not be required. This room is listed as optional in the schedule of accommodation.

Psychophysical and electrophysiology tests room

4.71 This room is required for carrying out psychophysical tests such as dark adaptation, contrast sensitivity and colour vision, and electrophysiology tests to measure the reaction of the eye or brain to a light stimulus. General room lighting should be on dimmer control, and complete blackout facilities are required.

4.72 Electrophysiology equipment comprises three elements: a computer and display unit, mounted on a trolley; a light stimulus, which is known as a Ganzfeld bowl stimulus and is about the same size as a piece of visual fields equipment; and a special television display linked to a signal generator. Mounting the equipment on a trolley enables it to be transferred for use in the operating theatre. For guidance on the protection of physiological equipment against electrical interference refer to paragraph 6.41.

4.73 In small departments, electrophysiology tests may be performed in the EEG department or the patient may be referred to a larger ophthalmology department which has the facility to carry out the tests. It may then be possible to adapt this room to function as a multi-purpose optometry room, for consultation and examination, provision of low vision aids and psychophysical testing.

4.74 This room is essential complementary accommodation.

Prosthetics room

4.75 The prosthetist is responsible for making artificial eyes. For some procedures, there needs to be close collaboration between the prosthetist and an optometrist. This room should therefore be located close to the optometry service.

4.76 This room should be large enough to accommodate a lathe. Plenty of worktop and storage space is required. A sink and drainer should be provided. The room should preferably be north facing, as this provides the most consistent natural daylight. Specialised daylight bulbs should be used for artificial lighting. For guidance on local ventilation for the lathe refer to paragraph 6.32.

4.77 Consideration should be given to the provision of a smaller, more private waiting area for the prosthetist's patients because of potential embarrassment for those awaiting the fitting of an artificial eye for the first time.

4.78 A prosthetics service is likely to be provided only in highly specialised centres, as the numbers of patients requiring such facilities are generally very low. Accommodation for prosthetics is therefore optional.

Support/utility spaces

4.79 For further guidance on the support/utility spaces described below, refer to HBN 40 – 'Common activity spaces'.

Clean utility room

4.80 A clean utility room is required, where drugs, medicines and lotions may be stored and prepared, a working supply of clean and sterile supplies may be held, and dressing trolleys prepared for use in c/e and treatment spaces. A Controlled Drugs cupboard is located here. Refrigerators will be required for the storage of some topical lotions and dispensers.

4.81 The room should be located close to the treatment room and c/e suite. Clinical hand-wash facilities are required.

Dirty utility room

4.82 A dirty utility room should include facilities for the cleaning of dressing trolleys and other items of equipment, for testing specimens of urine and recording results, for the disposal of liquid waste, and for temporarily holding items requiring reprocessing or disposal. A combined disposal unit, with worktop, and clinical hand-wash facilities will be required. Mechanical extract ventilation should be provided.

4.83 The dirty utility room should be located adjacent to the treatment room. If possible, it should also be adjacent to the specimen WC and include a hatch through which specimens can be passed.

Staff rest room, with beverage bay

4.84 A staff rest room is required where staff can relax and consume snacks and beverages. The rest room should have windows with a pleasant outlook, be comfortably furnished and include a telephone.

4.85 The staff rest room should include a beverage bay with facilities for making snacks and beverages, for washing and storing crockery and cutlery, for storing a limited quantity of dry goods, and for storing milk, etc in a refrigerator. Equipment should include a stainless-steel sink and drainer, an electric water boiler, a microwave cooker, a worktop with cupboards, an automatic dishwasher, and a hand-wash basin.

Equipment bay

4.86 A bay is required for the storage of auto refractors and corneal topography machines. These can be placed on small trolleys for ease of use and maximum flexibility. The equipment bay should be located immediately adjacent to the c/e bays.

General store

4.87 A store, with shelving, is required for items such as clean linen, disposables, stationery and other general supplies.

Cleaners' room

4.88 The space and facilities provided should be sufficient for parking and manoeuvring cleaning machines and a cleaner's trolley, and also for the cleansing of cleaning equipment and the disposal of fluids and used cleaning materials. Hand-washing facilities are also required.

4.89 Shelving and vertical storage should not encroach on the working space or restrict access to the cleaner's sink.

Switchcupboard

4.90 A switchcupboard, with lockable doors, housing the main isolators and distribution fuse switchgear for an ophthalmology out-patient department, should be:

a. accessible directly from a circulation area (access space may be part of the circulation area);

b. sited away from water services.

4.91 Where possible, the switchcupboard should be sited within the department. There should be clear and safe access for maintenance staff and care should be taken to ensure that safety is not compromised, during maintenance, from passing traffic or the opening of adjacent doors.

Office accommodation

4.92 For further guidance on office accommodation, refer to HBN 40 – 'Common activity spaces'.

General office

4.93 An office is required immediately adjacent to, and opening off, the reception desk to provide the administration and communication centre of the unit.

4.94 Duties of administrative and clerical staff may include management of the patient appointment system, preparation of patient notes, issue of discharge letters, liaison with other parts of the hospital, and preparation of reports and analysis of statistics.

4.95 VDTs are required for word-processing and other computer-related activities. Consideration should be given to routing all telephone calls to and from the unit through the general office. A fax machine will be required for transmitting messages to general medical practitioners and other personnel. A working supply of stationery, and leaflets to hand to patients and escorts and for display, can be stored in cupboards in the general office.

4.96 Plenty of storage space is required for the filing of health records. Patient records will be held in the hospital's central record store, but will be brought to the ophthalmology department in weekly batches. Adequate worktop space is required for the final checking and preparation of health records.

Sister's/manager's office

4.97 The department manager's office should contain facilities for the performance of tasks primarily involving desk work (including the use of a computer), paper storage, telephoning and interviewing.

4.98 This office should be large enough to accommodate the manager and at least three other people for interview or discussion. The room should contain an office workstation with VDT and keyboard, and storage for books and files. The office should be located close to the department's entrance to enable good communication with patients.

Consultant's office

4.99 The consultant's office will be very similar in size to the sister's/manager's office, see paragraph 4.97.

4.100 This office need not necessarily be located in the department. It is listed as essential complementary accommodation in the schedule of accommodation (see Chapter 7).

Optometrist's office

4.101 An office is required for the principal optometrist to carry out administrative duties and conduct staff meetings. For design and furnishings refer to paragraphs 4.97 and 4.98. This office is essential complementary accommodation.

Secretarial office

4.102 Office space for the consultants' secretaries is essential complementary accommodation. Whether single-person or multi-person offices are provided is a matter for local decision.

Social worker's office

4.103 Social workers are very closely involved with the counselling of patients who have been informed that their sight is rapidly deteriorating. The room should be large enough to accommodate a social worker and three other people for interview or discussion, and should contain an office workstation with telephone, VDT and storage for books and files. It is essential complementary accommodation.

Interview room

4.104 A room where patients and relatives can be interviewed and/or counselled in privacy should be provided in a quiet location. Natural light and ventilation are desirable. Semi-easy chairs and a coffee table are required. The interview room is essential complementary accommodation.

Seminar room

4.105 A room should be provided where teaching, tutorials, audit, research, case conferences, clinical instruction and other meetings can take place.

4.106 The seminar room is essential complementary accommodation. If provided in the department it should be located close to the c/e suite. Planning teams may wish to consider the provision of a sliding partition between this room and the consultation area to facilitate clinical instruction through observation.

4.107 Furniture and equipment may include library shelving or bookcases, upright stacking chairs with writing arms, a wall-mounted whiteboard, a mobile X-ray viewer, a video/TV monitor, a VDT and keyboard, a wall-mounted display panel and facilities for storing various items.

ORTHOPTIC CLINIC

4.108 The orthoptic clinic provides a service to diagnose and treat specific problems relating to binocular vision and ocular motility. This clinic can operate independently within the ophthalmology department. Patients attending the orthoptic clinic will enter the unit via the main patient entrance. It is essential therefore that the orthoptic reception desk and main waiting area are clearly identified as separate areas.

Patient reception spaces

Reception desk

4.109 The orthoptic reception desk is likely to be smaller than the main reception desk, but will still require privacy screens and enough storage and preparation space for patients' notes.

Sub-waiting and children's play area

4.110 See paragraphs 4.6 to 4.10. Since the majority of orthoptic patients are children, special attention should be given to providing sufficient play space.

Consulting/examination and treatment spaces

Consulting/examination suite – orthoptics

4.111 The c/e suite may be open-plan or divided into individual rooms. Each room will need to be at least 7 m long to accommodate a 6 m distance test, as children find it difficult to take the indirect test using mirrors. Doors and windows should not obstruct the sight line.

4.112 Where possible, each room should have a window for far distance vision testing. If provision of a window in each room is not possible, access to a c/e room with a window is essential.

4.113 Each examination space will require a desk and space to store equipment. Stationery, spare equipment, uniforms and dressings should be stored in wall-mounted cupboards. A clinical hand-wash basin is required.

4.114 Access to the main out-patients area will be via a link door located in the corridor serving the orthoptic c/e area. This will enable staff to access the main clinic without having to return through the waiting area. This should improve patient traffic flow and avoid congestion in the orthoptic waiting area.

Special examination room

4.115 The special examination room is intended to be a "quiet" room where preferential looking can be assessed, as well as providing a quieter, distraction-free environment for disabled children or adults.

4.116 Blackout facilities and dimmer lights are required as orthoptists often need to examine the back of the eye using an ophthalmoscope or visuscope.

4.117 This room will be adjacent to the orthoptic c/e area. It will house a wall-mounted Lees screen and the visual fields equipment.

4.118 Mobile, height-adjustable chairs are required for both the patient and orthoptist.

Office accommodation

Orthoptist's office

4.119 An office is required for administrative duties. This room will also be used for staff meetings and for holding private discussions with staff, parents or patients. For office design and furnishings, refer to paragraphs 4.97 and 4.98.

4.120 The orthoptists' office is essential complementary accommodation.

5.0 Other general functional and design requirements

Introduction

5.1 This chapter contains additional guidance on aspects of function and design which are common to all health buildings.

Statutory and other requirements, including Crown immunities

5.2 The guidance takes account, as far as possible, of all statutory and other requirements in force at the time of publication. However, health authorities and trusts are reminded of their responsibility for ensuring compliance with all relevant statutes, regulations, codes and standards.

5.3 With the general removal of Crown immunity, building and planning law is legally enforceable on the NHS. Guidance on the removal of Crown immunity is given in Circular HN(90)27/LASSL (90)15 (in Wales, WHC(91)4, and in Northern Ireland ESD 15781/92, in respect of a wide range of legislation.

Building components

5.4 The Building Components Database consists of a series of Health Technical Memoranda (HTMs) 54 to 70 which provide specification and design guidance on building components for health buildings which are not adequately covered by current British Standards. No firms or products are listed. The numbers and titles of the various HTMs in the series are listed in the 'References' section at the end of this Note.

Upgrading or adaptations of existing buildings

5.5 The standards set out in this guidance essentially apply to the provision of accommodation by new building. However, the principles are equally valid and should be applied, so far as is reasonably practicable, when existing accommodation is being upgraded or new accommodation is being constructed within an existing building which may previously have been used for other purposes. Compromises may have to be made between Health Building Note (HBN) standards and what is possible.

5.6 Before a decision is made to carry out an upgrading project, consideration must be given to the long-term strategy for the service, the space required for the new service, and the size of the existing building. Regard must also be paid to the orientation and aspect of the building, whether or not key HBN requirements can be met: for example, the need for accommodation with ground level access, and the adequacy and location of all necessary support services.

5.7 If a prima facie case for upgrading emerges, the functional and physical condition of the existing building should be thoroughly examined. The check of physical and other aspects of existing buildings should include:

- availability of space for alterations and additions;
- type of construction;
- insulation;
- age of the buildings and condition of building fabric – for example, external and internal walls, floors, roofs, doors and windows – which may be determined by a condition survey;
- life expectancy and adequacy of engineering services, ease of access and facility for installation of new wiring, pipework and ducts, if required;
- the height of ceilings. Certain procedures require a minimum ceiling height. High ceilings do not necessarily call for the installation of false ceilings, which are costly and often impair natural ventilation;
- changes of floor levels, to obviate any hazards to disabled people;
- the availability of ground floor accommodation to provide the required space;
- fire precautions;
- physical constraints to adaptation, such as load-bearing walls and columns.

5.8 When comparing the cost of upgrading or adapting an existing building to that of constructing a new building, due allowance – in addition to the building cost – must be made for the costs of relocating people, demolition, salvage, disruption of services in a phased project, and the temporary effects on running costs of any impaired functioning of areas of the building affected by the upgrading works.

5.9 The cost of upgrading work should conform to the guidelines which were originally promulgated in the Department's WKO letter (81) 4, and more recently referred to in Volume 4 of NHS Estates 'Quarterly Briefing'. Those guidelines take into consideration the estimated life of the existing building and the difference in cost between upgrading a building and constructing a new building.

Smoking

5.10 NHSME circular HSG(92)41, entitled 'Towards smoke-free NHS premises', promulgates Government policy set out in the 'Health of the Nation' White Paper, and required NHS authorities and provider units to implement policies so that the NHS became virtually smoke-free by 31 May 1993. The circular advises that a limited number of separate smoking rooms should be provided, where necessary, for staff and for patients who cannot stop smoking.

5.11 No provision has been made in this Note for staff or patients who wish to smoke.

6.0 Engineering services

Introduction

6.1 This chapter describes the engineering services contained within an ophthalmology department and how they integrate with the engineering systems serving the whole site. The guidance should acquaint the engineering members of the multi-disciplinary design team with the criteria and material specification needed to meet the functional requirements.

Model specifications

6.2 The National Health Service Model Engineering Specifications, including the Scotland and Northern Ireland supplements, are sufficiently flexible to reflect local needs. The cost allowance is based on the quality of material and workmanship described in the relevant parts of the specifications.

Economy

6.3 Engineering services are a significant proportion of the capital cost and remain a continuing charge on revenue budgets. The project design engineer should therefore ensure:

a. economy in initial provision, consistent with meeting functional requirements and maintaining clinical standards;

b. optimum benefit from the total financial resources these services are likely to absorb during their lifetime.

6.4 Where various design solutions are available, the consequential capital and running costs should be compared using the discounting techniques described in the Capital Investment Manual.

6.5 The economic appraisal of various locations and design solutions should include the heat conversion and distribution losses to the point of use. Where buildings are located remote from the development's load centre, these losses can be significant.

6.6 The energy management and accounting system should be part of the hospital building management system (BMS) and this should also include metering of all services where practical. If a hospital BMS is not available, the energy management and accounting system for this department should stand alone. It should also be suitable for subsequent integration with a future BMS. Further detailed guidance is contained in HTM 2005 – 'Building management systems'.

6.7 In view of the increasing cost of energy, the project team should consider the economic viability of heat recovery and combined heat and power (CHP) systems. Further guidance on CHP can be found in 'A strategic guide to combined heat and power'. Designers should ensure that those services which use energy do so efficiently and are metered where practicable.

Maximum demands

6.8 The estimated maximum demand and storage requirement, where appropriate, for each engineering service, will need to be assessed individually to take account of the size, shape, geographical location, operational policies and intensity of use of the department. NHS Estates may provide estimates of the maximum demand and storage requirements for a specific project if required by the project team.

Activity data

6.9 Environmental and engineering technical data and equipment details are described in the Activity Data Sheets which are listed in Chapter 8. They should be referred to for space temperatures, lighting levels, outlets for power, telephones, equipment details, etc.

Safety

6.10 The Health and Safety at Work etc Act 1974, as partly amended by the Consumer Protection Act 1987, together with the Workplace Regulations, the Work Equipment Regulations, and the Construction (Design and Management) Regulations 1994 impose statutory duties on employers and designers to minimise – so far as reasonably practicable – any risks arising from the design, construction, use, cleaning or maintenance of engineering systems. One of the requirements of this legislation is to ensure, so far as is reasonably practicable, that design and construction is such that articles and equipment will be safe and without risks to health at all times when it is being set, used, cleaned or maintained by a person at work.

Fire safety

6.11 The project team should familiarise themselves with 'Firecode', which contains the Department's policy and technical guidance on fire safety in hospitals and other NHS premises. In addition, the Fire Practice Note series provides guidance on specialist aspects of fire precautions.

Noise

6.12 Excessive noise and vibration from engineering services, whether generated internally or externally and transmitted to individual areas, or noise from other sources, for example speech which can be transmitted by the ventilation system, can adversely affect the operational efficiency of the department and cause discomfort to patients and staff. The limits and means of control advocated in HTM 2045 – 'Acoustics' should provide an acceptable acoustic environment.

6.13 In addition to designing for control of noise levels, there may also be a need to ensure speech privacy, so that confidential conversations are unintelligible in adjoining rooms or spaces. This will be important in consulting/examination areas and treatment rooms, particularly where these are located adjacent to waiting areas.

Space for plant and services

6.14 Space for plant and services should provide:

a. easy and safe means of access, protected as far as possible from unauthorised entry;

b. for frequent inspection and maintenance. Sufficient access panels should be provided for this purpose;

c. for eventual removal and replacement of plant.

6.15 Recommended spatial requirements for mechanical, electrical and public health engineering services are contained in HTM 2023 – 'Accommodation for plant and services'. Reference is also made in HTM 2023 to the Construction (Design and Management) Regulations 1994.

6.16 The distribution of mechanical and electrical services to final points of use should, wherever possible, be concealed in walls and above ceilings. Heat emitters should be contained within a 200 mm-wide perimeter zone under window sills and critical dimensions should be taken from the boundary of this zone.

6.17 The 200 mm zone includes the floor area occupied by minor vertical engineering ducts and is included in the building circulation allowance.

6.18 Services contained in the space above the false ceiling, with the exception of drainage, should be confined to those required for the department.

Access to control and isolation devices

6.19 Devices for control and safe isolation of engineering services should be:

a. located in circulation rather than working areas;

b. protected against unauthorised operation;

c. clearly visible and accessible, where intended for operation by the department's staff.

Engineering commissioning

6.20 The engineering services should be commissioned in accordance with the validation and verification methods identified in the latest HTMs. Engineering services for which a specific HTM is not currently available should be commissioned in accordance with 'Engineering Commissioning' published by the Institute of Healthcare Engineering and Estate Management. Flow measurement and proportional balancing of air and water systems require adequate test facilities to be incorporated at the design stage. Guidance is also contained in a series of commissioning codes published by the Chartered Institute of Building Services Engineers.

MECHANICAL SERVICES

Heating

6.21 Spaces in patient areas heated by low pressure hot water systems should use radiators of the low surface temperature type. Surface temperatures should not exceed 43°C. Exposed hot water pipework which is accessible to touch should be insulated. Further guidance is contained in '"Safe" hot water and surface temperatures'.

6.22 Radiators should normally be located under windows or against exposed walls with sufficient clear space between the top of the radiator and the window sill to prevent curtains reducing the output. There should be adequate space underneath to allow cleaning machinery to be used. Where a radiator is located on an external wall, back insulation should be provided to reduce the rate of heat transmission through the building fabric.

6.23 It is recommended that radiators are fitted with thermostatic radiator valves. These should be of robust construction and selected to match the temperature and pressure characteristics of the heating system. The

thermostatic head, incorporating a tamper-proof facility for presetting the maximum room temperature, should be controlled via a sensor located integrally or remotely as appropriate. To provide frost protection at its minimum setting, the valve should not remain closed below a fixed temperature.

6.24 Radiators may also be used to offset building fabric heat loss in mechanically ventilated spaces.

6.25 Flow temperatures to heating appliances should be controlled by the BMS in accordance with space requirements and external temperatures. The system should be zoned to suit the building.

Ventilation (general)

6.26 Air movement induced by mechanical ventilation should be from clean to dirty areas, where these can be defined. The design should allow for adequate flow of air into any space having only mechanical extract ventilation, via transfer grilles in doors or walls. Such arrangements, however, should avoid the introduction of untempered air and should not prejudice the requirements of fire safety or privacy.

6.27 Mechanical ventilation should ensure that both supply and extract systems are in balance, and take account of infiltration as appropriate.

6.28 Fresh air should be introduced via a low velocity system and should be tempered and filtered before being distributed via high level outlets. Diffusers and grilles should be located to achieve uniform air distribution within the space, without causing discomfort to patients.

6.29 A separate extract system will be required for "dirty" areas, for example sanitary facilities and dirty utility room (see also paragraph 4.82). It should operate continuously throughout the day and night. A dual motor fan unit with an automatic changeover facility should be provided. Additional extract system may be required for process equipment, that is film processors and prosthetics fitting equipment.

6.30 External discharge arrangements for extract systems should be protected against back pressure from adverse wind effects and should be located to avoid reintroduction of exhausted air into this or adjacent buildings through air intakes and windows.

6.31 Further detailed guidance is contained in HTM 2025 – 'Ventilation in healthcare premises', "Design considerations" volume.

Ventilation (substances hazardous to health)

6.32 Local exhaust ventilation will be required where exposure by inhalation of substances hazardous to health cannot be controlled by other means. The Health and Safety Executive in their current publication EH40, 'Occupational Exposure Limits', updated annually, sets limits which form part of the Control of Substances Hazardous to Health Regulations 1994 (COSHH).

Hot and cold water services

6.33 Guidance on the design and installation of hot and cold water supply and distribution systems is contained in HTM 2027 – 'Hot and cold water supply, storage and mains services' .

6.34 All cold water pipework, valves and fittings should be economically insulated and vapour sealed to protect against frost, surface condensation and heat gain.

6.35 The domestic hot water supply should be taken from the general hospital calorifier installation at a minimum outflow temperature of 60°C ± 2.5°C and distributed to all outlets such that the return temperature at the calorifier is not less than 50°C. See Health Guidance Note – '"Safe" hot water and surface temperatures'.

6.36 The requirements for the control of legionellae bacteria in hot and cold water systems are set out in HTM 2040 – 'The control of legionellae in healthcare premises: a code of practice'.

Piped medical gases and vacuum (where required)

6.37 Guidance on piped medical gas systems, anaesthetic gas scavenging and gas storage is contained in HTM 2022 – 'Medical gas pipeline systems'.

ELECTRICAL SERVICES

Electrical installation

6.38 The installation should comply in all respects with BS 7671:1992 – 'Requirements for Electrical Installations', IEE Wiring Regulations, 16th Edition (and subsequent amendments) and HTM 2007 – 'Electrical services: supply and distribution'.

6.39 The point of entry for the electrical supply should be a switch cupboard housing the main isolators, distribution and control equipment. This space will also accommodate the distribution centre for subsidiary electrical services. Supplies should be metered and, whenever possible, equipment should be mounted at a height which gives easy access from a standing position. Switchgear should be available for locking in the "off" position.

6.40 The electrical installation in occupied areas should be concealed using PVC-insulated cable and screwed steel conduit or trunking; however, in certain circumstances, mineral-insulated metal-sheathed or steel wire armour (SWA) cables may be used. External installations should use PVC-insulated cables in galvanised screwed steel conduit with waterproof fittings.

Electrical interference

6.41 Care should be taken to avoid mains-borne interference, radio frequency and telephone interference affecting physiological monitoring equipment, computers and other electronic equipment used here or elsewhere on the site.

6.42 Electrical products, systems and installations should not cause, or be unduly affected by, electromagnetic interference. This requirement is in the form of an EC Directive on Electromagnetic Compatibility (89/336/EEC as amended by 91/263/EEC and 92/31/EEC). This Directive has been implemented in UK law by the Electromagnetic Compatibility Regulations 1992 (SI No 2372).

6.43 Guidance on the avoidance and abatement of electrical interference is contained in HTM 2014 – 'Abatement of electrical interference'.

6.44 Fluorescent luminaires should comply with BS 5394.

Lighting

6.45 Colour finishes and lighting throughout the department should be co-ordinated to create a calm and welcoming atmosphere. Practical methods are contained in the CIBSE Lighting Guide LG2 – 'Hospitals and Health Care Buildings'.

6.46 Architects and engineers should collaborate to ensure that decorative finishes are compatible with the colour rendering properties of the lamp and that the spectral distribution of the light sources is not adversely affected.

6.47 Luminaires should be manufactured and tested in accordance with the requirements specified in the relevant sections of BS 4533. Their location should afford ready access for lamp changing and maintenance, but with the overriding requirement that the recommended standard of illuminance is provided to the task area in all treatment rooms.

6.48 The number and location of luminaires connected to a circuit and the number of switches and circuits provided should allow flexibility in the general and local level of illumination, particularly in areas away from windows where daylight can vary significantly. Some areas of the department, which may be unoccupied for long periods may also be suited to automatic/presence switching.

6.49 Generally, energy-efficient luminaires should be used wherever possible. Intermittently and infrequently used luminaires may be fitted with compact fluorescent or incandescent lamps.

6.50 Mobile examination luminaires, where provided, should operate at extra low voltage (normally fed from an in-built, step-down transformer), be totally enclosed and be equipped with a heat filter. The temperature of external surfaces should be such as to avoid injury to patients and staff.

6.51 Where visual display terminals (VDTs) are to be used, the lighting should be designed to avoid bright reflections on the screen and to ensure that the contents of the screen are legible and meet the Health and Safety (Display Screen Equipment) Regulations 1992, which came into force on 1 January 1993. The Regulations implement a European Directive, No. 90/270/EEC of 29 May 1990, on minimum safety and health requirements for work and display screen equipment. Further guidance is contained in the CIBSE Lighting Guide LG3.

6.52 The lighting of corridors, stairways and other circulation areas, which generally are areas not covered by Activity Database room data sheets, should be in accordance with the guidance contained in HBN40 – 'Common activity spaces', Volume 4.

6.53 Safety lighting should be provided on primary escape routes in accordance with HTM 2011 – 'Emergency electrical services' and BS 5266.

Lighting treatment room

6.54 An examination luminaire should be provided over the treatment chair/table. It should be adjustable in pitch and rotation to allow the beam to be directed locally and should provide reasonably shadow-free illumination with negligible heat development to avoid injury to patients and staff. The examination luminaires should be manufactured and tested in accordance with the requirements specified in the relevant sections of BS 4533.

Controlled Drugs cupboard

6.55 A red indicating lamp should be provided on each Controlled Drugs cupboard and, where appropriate, outside the doorway to the room in which the cupboard is located and at a continuously staffed location. The lamps should be interlocked with the cupboard and alarm system to give visual and audible indication at the continuously staffed location of unauthorised entry to the cupboard.

6.56 An indicating lamp denoting that the circuit is energised should also be fitted to each cupboard. The supply circuits for the lamps and alarm system should be derived from essential circuits. The cupboards should comply with BS 2881. Further information is contained in HTM 63 – 'Fitted storage systems'. More general information is contained in HC(77) 16 (in Wales – WHN (77) 32) and guidelines for the Safe and Secure Handling of Medicines.

Socket-outlets and power connections

6.57 Sufficient 13 amp switched and shuttered socket-outlets, connected to ring or spur circuits, should be provided to supply all portable appliances likely to be used simultaneously. The installation of twin outlets should be considered where activities occur in juxtaposition.

6.58 Switched socket-outlets should be provided in corridors and in individual rooms to enable domestic cleaning appliances with flexible leads (9 metres long) to operate over the whole department.

6.59 Appliances requiring a three-phase supply, or those rated in excess of 13 amp single phase, should be permanently connected to separate fused sub-circuits. The sub-circuits should be fed from the distribution board and terminate at a local isolator. Fixed appliances, less than 13 amp rating, should be permanently connected to a double-pole switched 13 amp spur outlet. The spur outlet should contain an indicating light, where appropriate, and a suitable fuse.

6.60 Isolation switches should be provided adjacent to all engineering plant and equipment for use by maintenance staff.

6.61 All socket-outlets in consulting/examination/treatment areas should be connected such that a supply is available from at least two separately fused circuits of the same phase.

6.62 Socket-outlets should be connected to essential circuits in accordance with the guidance contained in HTM 2011 – 'Emergency electrical services'.

6.63 Advice on the power supply and requirements for fixed and mobile radiodiagnostic equipment is contained in HTM 2007 – 'Electrical services: supply and distribution'.

6.64 The electrical supply connections to all medical electrical equipment should comply with BS EN 60 601-1-2:1993.

Emergency electrical supplies

6.65 Guidance on emergency electrical supplies is contained in HTM 2011 – 'Emergency electrical services'.

Personal alarm transmitters

6.66 Local security policies should determine at the planning stage whether or not staff are to be issued with personal alarm transmitters.

6.67 If personal alarm transmitters are not "self-contained", conduits and accommodation for transmitting/receiving equipment and propagating devices, such as induction loops and/or aerials, will be required to suit the selected system.

Security alarm

6.68 A security alarm actuating switch or button should be located unobtrusively at the reception desk and staff base. It should be connected to a continuously staffed area such as the hospital telephone switchboard or the porter's room.

Staff location system

6.69 The hospital staff location system should be extended to include this department. Further guidance is contained in HTM 2015 – 'Bedhead services'.

Patient/staff and staff/staff call systems

6.70 The patient/staff and staff/staff call systems may be hard-wired or radio systems. In all cases they must be electromagnetically compatible (see also paragraphs 6.41 to 6.44).

6.71 Patient/staff call points should be provided in all spaces where patients may be left alone temporarily, such as consulting/examination/treatment rooms and patient WCs. Each call unit should comprise a push button or pull cord, reassurance lamp and reset unit. The audible alarm signal initiated by patients should operate for one second at ten second intervals with corresponding lamps lit continuously until cancelled.

6.72 Staff/staff call points should be provided in all spaces where staff consult, examine and treat patients. Call units should generally comprise a switch (pull to call, push to reset) and reassurance lamp. The audible alarm signal initiated by the staff should operate intermittently at half-second intervals with corresponding lamps flashing on and off at the same rate.

6.73 A visual and audible indication of operation of each system should be provided at the staff base to give responding staff unambiguous identification of the call source. Further guidance is contained in HTM 2015 – 'Bedhead services'.

Telephones

6.74 Central telephone facilities for internal and external calls will normally be available and should be extended to serve this department. Telephones will normally be of the desk pattern.

6.75 Coin and/or card-operated payphones and a free phone for taxis, depending on local policy, should be provided in the main waiting area.

6.76 Self-contained intercommunication systems are relatively inflexible and limited in the extent of their economic application. Any subsequent modifications to them usually involve disproportionate cost. In only very rare instances can such systems be justified for functional or clinical reasons.

6.77 A properly planned telephone system will provide prompt intercommunication facilities between all extensions. Abbreviated dialling can be used for a range of frequently called extension numbers. Consequently, reasons for providing a separate intercommunication system should be clearly shown.

6.78 Further guidance on telephone systems is contained in HBN 48 – 'Telephone services' and HTM 2055 – 'Telecommunications (telephone exchanges)'.

Staff to patient communications system

6.79 "Telephone voice paging" public address systems may be relatively expensive, and therefore a simple self-contained public address system, or a "next patient" visual/buzzer system, may be more suitable. Any system adopted should take due account of the needs of visually-impaired people and of those patients whose first language is not English. Patients often prefer a member of staff to come and collect them, however.

Data links

6.80 Conduits will be required for cables to interconnect electronic equipment. The extent to which these conduits should link all workstations in this department and the main hospital system or elsewhere will depend on the local policy for automatic data processing (see paragraph 3.21). If a structured cable system is to be installed within the hospital, the ophthalmology department should be provided with all outlets wired and connected. Conduits may also be required to link closed-circuit television between the seminar room and treatment areas.

Clocks

6.81 Clocks may be of impulse, synchronous or battery/quartz type, except in the treatment room where they should display "real time", "elapsed time" and have a sweep second hand. Clocks in the main waiting areas should be large to allow for ease of reading by the visually impaired.

Music and television

6.82 Conduits for television/video and background music system outlets should be provided in the main waiting area (see paragraph 4.9).

Lightning protection

6.83 Protection of the building against lightning should be provided in accordance with HTM 2007 and BS 6651: 1992.

INTERNAL DRAINAGE

General

6.84 The primary objective is to provide an internal drainage system which:

a. uses the minimum of pipework;

b. remains water and air tight at joints and connectors;

c. is sufficiently ventilated to retain the integrity of water seals.

Design parameters

6.85 The design should comply with the relevant British Standards and Codes of Practice, including BS 5572, and the current Building Regulations. Recommendations for spatial and access requirements for public health engineering services are contained in HSE Data Sheet EA5.

6.86 The gradient of branch drains should be uniform and adequate to convey the maximum discharge to the stack without blockage. Practical considerations, such as available angles of bends, junctions and their assembly, as well as space considerations, usually limit the minimum gradient to about 1:50 (20 mm/m). For larger pipes, for example 100 mm diameter, the gradient may be less, but this will require workmanship of a high standard if an adequate self-cleaning flow is to be maintained. It is not envisaged that pipes larger than 100 mm diameter will be required within interfloor or ground floor systems serving this department.

6.87 Provision for inspection, rodding and maintenance should ensure "full bore" access and be located to minimise disruption or possible contamination. Manholes should not be located within this department.

7.0 Cost information

Introduction

7.1 For all types of health building, it is important that building costs and revenue expenditure are kept as low as possible, and are consistent with acceptable standards. In applying the guidance in this document to determine a detailed design, the need for economy should always be of prime concern, and the activities should be carefully considered so that, where appropriate, space can be shared for similar activities which are programmed to take place at different times. The solution adopted should not be detrimental to either the proper functioning of the spaces involved or to the needs of the users. Within this general context, Health Building Notes provide a synopsis of accommodation for health buildings which the Department of Health recommends for the provision of a given service.

Departmental Cost Allowance Guides

7.2 Departmental Cost Allowance Guides (DCAGs) related to this Note are officially notified in 'Quarterly Briefing', published by NHS Estates. A full listing of all DCAGs is available via a hard copy listing of the DCAG Database, together with guidance notes, which can be obtained from NHS Estates. Further information on this can be obtained from NHS Estates, telephone (0113) 254 7029 or 254 7030.

7.3 The attention of the project team is drawn to guidance given in the Capital Investment Manual (Business Case Guide). This publication seeks to reflect the important changes that have taken place over recent years, both with the introduction of the NHS reforms and with the changing patterns of healthcare delivery. This new process is intended to reduce unnecessary and often expensive planning work which may subsequently prove to be abortive, and emphasises the necessity for a sound business case in support of the capital expenditure involved. The Capital Investment Manual states that the capital works estimate of capital costs must be based on, where applicable, industry norms such as the DCAGs plus a percentage to cover for on-costs.

7.4 The DCAGs for this Note reflect the accommodation that the ophthalmology department will require when incorporated into an acute general hospital where the common use of services will be available. Costs are based on the typical two-storey new-build as an extension to an out-patients department, on a greenfield site with no planning constraints.

7.5 The DCAGs for this Note also cover the building and engineering requirements. An allowance for on-costs (that is, external works, external engineering services and abnormals) should be added to the DCAGs for this department (see also paragraph 7.24). The abnormals will largely be determined by the characteristics of the site, such as an inner-city location, or the condition and type of the existing building if refurbishment is the only option.

7.6 It is also important that project teams assess at the earliest opportunity all the likely on-cost implications of individual sites and schemes.

7.7 DCAGs are exclusive of VAT, building and planning fees, professional fees and all local authority charges, and are based on a locational factor of 1.

Locational factors

7.8 Locational factor adjustments may be applied to the Works Costs (that is, the total of the DCAGs plus the requisite on-costs) to take into account the local market conditions. For further information regarding these, please refer to the regional location factors in 'Quarterly Briefing', published by NHS Estates.

Functional units

7.9 The functional unit for an ophthalmology out-patients department is the total number of consultation/examination (c/e) rooms or bays that are required.

7.10 In our example (as shown in Appendix B calculations) the functional units are as follows:

- 10 c/e rooms or bays
- 20 c/e rooms or bays.

7.11 The total number of c/e rooms and bays required includes those contained within the general ophthalmology areas and those within the orthoptic area.

7.12 It is important to note at this stage that if the ratio of general ophthalmic c/e rooms or bays to orthoptic rooms or bays is different from the given example, the overall departmental area will alter, as the floor area for a general ophthalmic c/e room or bay is different from that of an orthoptic room or bay.

7.13 The total number of c/e rooms and bays will be divided into a number of "suites", each comprising a consultation room for the consultant and a number of support rooms or bays. The ratio of consultation rooms to support spaces, and the ratio of general ophthalmology c/e spaces to orthoptic c/e spaces are both determined by operational policy and will therefore vary from department to department (refer to Appendix B).

7.14 The activity spaces and areas used for costing the functional units are listed in the schedules of accommodation at the end of this section.

Essential complementary accommodation (ECA)

7.15 Essential complementary accommodation (ECA) comprises activity spaces which are essential to the running of a local healthcare resource centre, but which, in certain circumstances, may be available in a convenient location elsewhere in the centre. The ECA spaces costed in this Note are listed in the schedules of accommodation at the end of this chapter. Standard allowances have been added to the core area (refer to 7.22).

Optional accommodation and services (OAS)

7.16 This Note draws attention to areas of accommodation considered to be project options for providing services or facilities, including the likely cost implications. This information will enable the project team to select the most appropriate design solution. The optional accommodation and services (OAS) spaces costed in this Note are listed in the schedules of accommodation at the end of this chapter. Standard allowances have been added to the core area (refer to 7.22).

Dimensions and areas

7.17 In determining spatial requirements, the essential factor is not the total area provided but the critical dimensions – that is, those dimensions critical to the efficient functioning of the activities that are to be carried out. To assist project teams in preparing detailed design solutions for the rooms and spaces, studies have been carried out to establish dimensional requirements in the form of critical dimensions. The results of these studies appear as ergonomic diagrams in HBN 40 – 'Common activity spaces' (Volumes 1–4).

7.18 For development planning, and at the earliest stage of a design, it may be convenient for designers to have data available which will enable them to make an approximate assessment of the sizes involved. For this reason, the areas prepared for the purpose of establishing the cost allowances are included at the end of this chapter.

7.19 It is emphasised that the areas published do not represent recommended sizes, nor are they to be regarded in any way as specific individual entitlements.

7.20 Another important factor affecting the area requirement is the timetabling of those services offered within the ophthalmology out-patients department. For example, a department with a good operational policy which attempts to rationalise the use of clinical rooms for consultation, examination and interview, can function with fewer clinical rooms.

7.21 In the planning of an efficient design, it may be necessary to consider the variation of areas; for instance, in the refurbishment or conversion of older property:

a. rooms tend to be larger than the recommended area;

b. some rooms may be too small or in the wrong location for efficient use;

c. circulation space tends to form a larger than normal proportion of the total area.

Circulation

7.22 Space for circulation, as well as including space for all corridors, also includes:

- a 5% allowance for planning;
- a 3% addition for an engineering zone adjacent to the external walls;
- all small vertical ducts;
- and spaces occupied by partitions and walls.

These areas are all included, and therefore costed, in the DCAGs.

7.23 It is also important to remember that the circulation figures included in the DCAGs for this Note are those anticipated for new, purpose-built premises with no constraints. Where constraints are encountered, for example in the refurbishment or conversion of older types of property, this circulation figure would be likely to increase accordingly, and it may therefore be necessary to make some adjustment to the circulation figure.

Communications

7.24 Staircases and lifts are not included in the DCAGs relevant to this Note. Costs related to these elements,

along with a suitable space standard allowance, should be made in the on-costs. For further guidance, reference should be made to Volume 4 "Circulation areas" of HBN 40 – 'Common activity spaces'.

Land costs

7.25 As is the norm for DCAGs, costs are exclusive of all land costs and associated fees. However, the project team's attention is drawn to the fact that costs associated with these should be included in the Business Case Submission, as detailed in the Capital Investment Manual (see paragraph 7.3 above), and could therefore be an important part of the overall cost viability of the scheme.

Engineering services

7.26 The following engineering services, as described in Chapter 6 and exemplified in the Activity Data in Chapter 8, are included in the cost allowances:

a. Mechanical services:

   Heating: low-pressure hot water system with thermostatic radiator control, maximum touch temperature 43°C.

   Ventilation: mechanical supply and extract to meet clinical and functional requirements (share of central ventilation and cooling plant included).

   Cold water service: supplied from a central storage to service points, and includes drinking water and hose reels. Storage tanks are not included.

   Hot water service: supplied from a central storage system. Storage is not included;

b. Electrical services:

   Departmental distribution switchboard.

   Building management system.

   Ventilation: mechanical supply and extract to meet clinical and functional requirements (share of central ventilation and cooling plant included) in laser treatment room, prosthetics room and dirty utility room.

   Lighting system: general lighting, as required by tasks; fluorescent, tungsten, safety and emergency luminaires as appropriate. Dimming included for consulting/examination and treatment spaces (visual fields test room, ultrasound room, laser treatment room, photography room, psychophysical and electrophysiology test room, prosthetics room) and in support/utility spaces (special examination room). Examination light in treatment room.

   Power system: socket-outlets and other power outlets for fixed and portable equipment. Supplementary equipotential earth bonding connections. Standby and safety installations from the main hospital supplies.

   Alarm system: fire, security, and Controlled Drugs cupboard.

   Clocks: battery-operated (except where stated otherwise).

   Staff location: extension from hospital system.

   Staff/staff and patient/staff call system.

   Telephones: conduits, cabling and outlets, but excluding handsets, payphones, etc.

   Data transmission: conduits only.

   Radio, TV and music: conduits to relevant areas only;

c. Equipment (Group 1):

   X-ray viewers in consulting/examination areas and treatment rooms

   Controlled Drugs cupboard (clean utility room)

   Examination luminaires

   Thermostatic mixing valves

   Water boiler

   Dishwasher.

Schedules of accommodation

7.27 The following schedules are based on the text in Chapters 3 and 4, and are illustrative of the acceptable accommodation for the functional units detailed.

HBN 12(4) - Ophthalmology Department
Schedule of Accommodation

Consultation / Examination Rooms and Bays *			10 rooms/bays		20 rooms/bays	
Para. No	Activity	Space Area m^2	Qty	TOTAL AREA m^2	Qty	TOTAL AREA m^2
	Patient Reception Department					
4.3	Reception Desk	-	1.00	6.00	1.00	13.50
4.109	Reception Desk (Orthoptic)	-	-	-	1.00	6.00
4.6	Main Waiting Area	-	1.00	56.00	1.00	80.00
4.10	Children's Play Space	13.00	1.00	13.00	2.00	26.00
4.12	Wheelchair bay	1.50	1.00	1.50	1.00	1.50
4.20	Sub-waiting Area	32.00	-	-	3.00	96.00
4.110	Sub-waiting Area (Orthoptic)	22.00	-	-	1.00	22.00
4.110	Children's Play Space (Orthoptic)	13.00	-	-	1.00	13.00
4.13	WCs - assisted ambulant (Type 2)	2.50	2.00	5.00	4.00	10.00
4.14	Disabled WC & Nappy Change (Type 6)	5.50	1.00	5.50	1.00	5.50
4.15	Specimen WC (Type 4)	4.50	1.00	4.50	1.00	4.50
	Consulting/Examination & Treatment Spaces					
4.23	Staff Base	6.0	-	-	1	6.00
4.27	Visual Fields Test Room	30.5	1	30.50	3	91.50
4.66	Low Vision Assessment Room	13.0	-	-	1	13.00
4.31	Consultation/Examination Rooms or Bays	11.0	9	99.00	15	165.00
4.111	Consultation/Examination Room (Orthoptic)	17.5	1	17.50	5	87.50
4.115	Special Examination Room (Orthoptic)	30.5	-	-	1	30.50
4.41	Treatment Room	15.0	1	15.00	1	15.00
4.47	Recovery Room	13.0	-	-	1	13.00
	Facilities for Staff					
4.84	Staff Rest Room including beverage bay - small	-	1	14.00	-	-
4.84	Staff Rest Room including beverage bay - large	-	-	-	1	24.00
	Support/Utility Spaces					
4.80	Clean Utility Room	-	1	7.00	1	11.50
4.82	Dirty Utility Room	12.5	1	12.50	1	12.50
4.86	Equipment Bay	5.5	1	5.50	1	5.50
4.87	General Store	-	1	6.00	1	12.00
4.88	Cleaner's Room	7.0	1	7.00	1	7.00
4.90	Switchcupboard	2.0	1	2.00	1	2.00
	Office Accommodation					
4.93	General Office	-	1	9.00	1	13.50
4.97	Sister / Manager's Office	11.0	1	11.00	1	11.00
	NET TOTAL	-		327.50		798.50
	Planning	5%		16.38		39.93
	Sub-total	-		343.88		838.43
	Engineering zone	3%		10.32		25.15
	Circulation	31%		106.60		259.91
	GROSS TOTAL			460.79		1,123.49
	DEPARTMENTAL TOTAL			**460.00**		**1,125.00**

* The functional unit total includes C/E Rooms and Bays for the general Ophthalmology **and** Orthoptic areas.

Refer to "Cost Chapter" for guidance on the functional unit and calculation of the same.

HBN 12(4) - Ophthalmology Department : Essential Complementary Accommodation

Schedule of Accommodation

Para. No	Activity	Space Area m^2	Planning m^2	Sub-total m^2	Engineering m^2	Circulation m^2	Total m^2
	Essential Complementary Accommodation						
4.16	Pharmacy (Office & Dispensary)	19.00	0.95	19.95	0.60	6.18	26.5
4.51	Ultrasound Room	12.00	0.60	12.60	0.38	3.91	17.0
4.53	Laser Treatment Room	10.50	0.53	11.03	0.33	3.42	15.0
4.58	Photography Room	26.00	1.30	27.30	0.82	8.46	36.5
4.64	Darkroom	9.00	0.45	9.45	0.28	2.93	12.5
4.71	Psychophysical & Electrophysical Test Room	15.00	0.75	15.75	0.47	4.88	21.0
4.104	Interview Room	6.00	0.30	6.30	0.19	1.95	8.5
4.105	Seminar Room - small (10 person)	20.00	1.00	21.00	0.63	6.51	28.0
4.105	Seminar Room - large (20 person)	30.00	1.50	31.50	0.95	9.77	42.0
4.99	Consultant's Office	11.00	0.55	11.55	0.35	3.58	15.5
4.101	Optometrist's Office	11.00	0.55	11.55	0.35	3.58	15.5
4.102	Secretary's Office - 1 workstation	7.00	0.35	7.35	0.22	2.28	10.0
4.102	Secretaries' Office - 2 workstations	13.50	0.68	14.18	0.43	4.39	19.0
4.103	Social Worker's Office	11.00	0.55	11.55	0.35	3.58	15.5
4.119	Orthoptist Office (Orthoptic)	11.00	0.55	11.55	0.35	3.58	15.5

HBN 12(4) - Ophthalmology Department : Optional Accommodation & Services

Schedule of Accommodation

Para. No	Activity	Space Area m^2	Planning m^2	Sub-total m^2	Engineering m^2	Circulation m^2	Total m^2
	Optional Accommodation						
4.19	Optical Dispensary	11.00	0.55	11.55	0.35	3.58	15.5
4.24	Vision Testing Spaces	30.00	1.50	31.50	0.95	9.77	42.0
4.66	Low Vision Assessment Room	13.00	0.65	13.65	0.41	4.23	18.5
4.68	Refraction / contact lens Room	13.00	0.65	13.65	0.41	4.23	18.5
4.115	Special Examination Room (Orthoptic)	30.50	1.53	32.03	0.96	9.93	43.0
4.75	Prosthetics Room	14.50	0.73	15.23	0.46	4.72	20.5
4.77	Sub-waiting (Prosthetics)	5.00	0.25	5.25	0.16	1.63	7.0
4.47	Recovery Room	13.00	0.65	13.65	0.41	4.23	18.5

8.0 Activity data

Introduction

8.1 Activity DataBase is an information system developed to help project and design teams by defining the users' needs more precisely. This information constitutes the computerised Activity DataBase for Windows, up-dated twice yearly. It comprises two types of information sheet: room data sheets (formerly activity space data sheets or A-Sheets) and their supporting assembly data sheets (formerly activity unit data sheets or B-Sheets).

8.2 Room data sheets record in more detail than is described in this Note, each task or activity that is performed in a particular activity space, together with environmental conditions and the technical data necessary to enable the activities to be performed. Each room data sheet also contains a list of relevant assembly and component codes and descriptions. Room area information is provided in conjunction with a room graphic.

8.3 Assemblies provide narrative text and ergonomically arranged scale graphics relating to one activity. They show equipment fitted or supplies as part of the building, and the necessary engineering terminals.

8.4 Component schedules provide information about the total numbers of group 1, 2 and 3 components for single data sheets or for all data sheets for a department. Group 4 components are not included in the schedule – see paragraph 1.10.

8.5 Activity data is only available in the form of magnetic media, but users may generate paper copies where required.

8.6 Further information about the use and preparation of activity data can be obtained from NHS Estates, Department of Health, 1 Trevelyan Square, Boar Lane, Leeds LS1 6AE.

Activity data applicable to this Note

8.7 The room data sheets recommended for the activity spaces described in this Note are either new, amended or selected from existing sheets. A list of room data sheet code numbers and titles is given at the end of this chapter.

8.8 Further activity data sheets may be selected, or drawn up by project teams to their own requirements, for any services not described in the Note or included in the list.

8.9 In order to ensure consistent and economic provision, variations from the room data sheets recommended for the spaces covered in this Note should be considered only where it has been decided that the function of a space will differ substantially from that described.

Lists of room data sheets

8.10 The room data sheets listed below may not carry a title identical to the activity spaces detailed in this Note. Use of the appropriate code number will, however, result in the correct activity space being accessed.

8.11 The room data sheets are listed below in the same order as the spaces to which they relate are listed in the schedule of accommodation (Chapter 7).

8.12 Some of the room data sheets listed below relate specifically to a department of a certain size. For smaller or larger sizes of department the room data sheets will need to be amended as appropriate.

Para no.	Activity space	Room data sheet code
	Reception spaces	
4.3	Reception desk, 1 person	J0205
4.3	Reception desk, 3 persons	J0212
4.109	Reception desk, 1 person (orthoptics)	J0205
4.6	Main waiting area, 40 persons	J1105
4.6	Main waiting area, 70 persons	J1106
4.10	Children's play space, 12 children	J1408
4.12	Wheelchair bay	G0129
4.20	Sub-waiting area, 25 persons	J1116
4.110	Sub-waiting area, 15 persons (orthoptics)	J1230
4.110	Children's play space, 12 children (orthoptics)	J1408
4.13	WCs – assisted ambulant (type 2)	V1101
4.14	Disabled WC & nappy change (type 6)	V1215
4.15	Specimen WC, with hatch (type 4)	V1406
	Consulting/examination and treatment spaces	
4.23	Staff base	T0110
4.27	Visual fields test room	C1020
4.66	Low vision assessment room	C1021
4.31	Consultation/examination room	C1010
4.31	Consultation/examination bay	C1011
4.111	Consultation/examination room (orthoptics)	C1013
4.115	Special examination room (orthoptics)	C1015
4.41	Treatment room	X0204
4.47	Recovery room, including trolley	B2508
	Staff facilities	
4.84	Staff rest room, with beverage bay, 10 persons	D0201
4.84	Staff rest room, with beverage bay, 15 persons	D0203
	Support utility spaces	
4.80	Clean utility room	T0502
4.80	Clean utility room	T0505
4.82	Dirty utility room	Y0412
4.86	Equipment bay	G0105
4.87	General store	W1110
4.87	General store, large	W1108
4.88	Cleaner's room	Y1201
4.90	Switch cupboard	K0101A
	Office accommodation	
4.93	General office, with workshop, 1 person	M0113
4.93	General office, with workshop, 2 persons	M0114
4.97	Sister's/manager's office	M0206
	Essential complementary accommodation	
4.16	Pharmacy (office and dispensary)	Z0115
4.51	Ultrasound room	E0114
4.53	Laser treatment room	X0215
4.58	Photography room	C1025
4.64	Darkroom	R0103
4.71	Psychophysical and electrophysiology test room	C1027
4.104	Interview room, 4 persons	M0712
4.105	Seminar room, 10 persons	H0503
4.105	Seminar room, 20 persons	H0501
4.99	Consultant's office	M0304

Para no.	Activity space	Room data sheet code
4.101	Optometrist's office	M0304
4.102	Secretarial office, 1 person	M022/A
4.102	Secretarial office, 2 persons	M0319
4.103	Social worker's office	M0206
4.119	Orthoptist's office	M0304
	Optional accommodation and services	
4.19	Optical dispensary	C1019
4.24	Vision testing spaces	C1022
4.66	Low vision assessment room	C1023
4.68	Refraction/contact lens room	C1024
4.115	Special examination room (orthoptics)	C1015
4.75	Prosthetics room	L1701
4.77	Sub-waiting (prosthetics)	J1206
4.47	Recovery room	B2508

Appendix A – Glossary of terms

Blindness
There is a legal definition of blindness, but only about 1 in 5 of those who are registered blind actually have no sight at all. The other 80% will have varying degrees of visual impairment from the mere perception of light to the ability to detect the top letter on a 6 m Snellen chart at a viewing distance of 3 m.

Corneal topogometer
An instrument which provides a contoured map of the front surface of the cornea.

Dark adaptometry
A method for determining the eye's sensitivity to light. The test is conducted in a darkened room over the course of at least half an hour.

Fluorescein angiography
A method where a fluorescing chemical dye is injected into the blood stream to show the outline of blood vessels. In ophthalmology the vessels on and behind the retina can be examined and photographed.

Keratometer
An instrument for determining the curvature of the anterior surface of the cornea. It is used in contact lens fitting.

Lees screen
A double screen mounted in a corner used to plot eye movements.

Ophthalmoscope
A hand-held instrument for examining inside the patient's eye.

Optometry
The professional practice of primary eye and vision care for the diagnosis, treatment and prevention of associated disorders and for the improvement of vision by the prescription of spectacles and by use of other functional and optical means. The provision of this service in an ophthalmology department is likely to include an increased range of clinical tests over those carried out by optometrists in the primary health service.

Orthoptics
The practice of assessment, diagnosis and treatment of visual function problems and eye muscle disorders by the re-education of visual habits and exercises.

Refraction
The means by which the optical power of the eye is determined. It is the method used to obtain a spectacle or contact lens prescription.

Slit lamp
A binocular microscope for examining in detail the anterior part of the eye.

Snellen test
The standard used in the UK to estimate the degree of "distance vision" the patient can achieve.

Visual field analyser
A device to provide a record of the field of vision, that is, how much a patient can see in directions other than straight ahead.

Appendix B – Sizing guide

This appendix provides an example of how to calculate the number of consulting/examination (c/e) spaces required for ophthalmology departments with:

a. 10,000;

b. 45,000 attendances per annum.

This HBN describes a c/e suite, which comprises one c/e room for the consultant and a number of support c/e bays for other medical staff (see paragraph 4.31). A model layout for a c/e suite is illustrated in Figure 3, Chapter 4.

The distinction between c/e rooms and bays is important, as it is the number of c/e rooms which determines the number of suites.

There are two steps in determining the optimum size of an ophthalmology department:

- Step 1:

  The first step is to calculate how many c/e rooms, and hence suites, are required. Consultants generally see new referrals only (follow-up patients are seen by other medical staff), so the total number of c/e rooms, and hence suites, will be determined by the total number of new referrals per annum.

- Step 2:

  The second step is to calculate the number of support c/e bays required, as this will vary according to case mix. The number of c/e bays will be determined by two factors:

  a. operational policy

     if patient history taking and routine vision tests are carried out by nursing staff in the c/e area prior to the consultation, one support c/e bay will be required for each c/e room.

  b. number of follow-up patients

     all follow-up patients will be seen by the consultant's support medical staff in c/e bays within the suite.

The total number of c/e spaces required will also depend upon a range of other factors, including variations in workload, ratio of new referrals to return visits, number of clinic sessions etc, which are described more fully in paragraph 2.21. The sizing calculation in this appendix is an illustration only: it is based on a given set of data and a range of assumptions. Since factors will vary according to case mix and other circumstances, planning teams should substitute local data.

For the purposes of this calculation, the following assumptions have been made:

a. the ratio of new referrals to return attenders is 1 to 4;

b. there will be ten clinic sessions per week for 10,000 attendances, and nine sessions per week for 45,000 attendances (assuming that one session will be used for training);

c. consultants will be available for 42 weeks per year, and other medical staff for 48 weeks;

d. consultants will see all first referrals, at a rate of 13 patients per clinic session;

e. other medical staff will see return attenders, at a rate of 15 patients per clinic session;

f. effective consulting time = 3¼ hours per clinic session.

To calculate the size of an ophthalmology department with 10,000 out-patient attendances per annum

Option 1: Assuming a ratio of one new referral to four follow-up patients

STEP 1: New referrals

1A. Divide the total number of new referrals by the total number of consulting weeks

$$\frac{2{,}000}{42}$$

equals 47.6 new referrals per week

1B. Divide new referrals per week by number of patients per clinic session

$$\frac{47.6}{13}$$

equals 3.6 consulting sessions per week

1C. Divide number of consulting sessions per week by the number of clinic sessions per week

$$\frac{3.6}{10}$$

equals 0.36, rounded to **one** c/e room required

If history taking and vision testing are carried out in c/e bays by nursing staff prior to consultation, one support c/e bay will be required for each c/e room calculated.

Therefore, **one extra** c/e bay required.

STEP 2: Follow-ups

2A. Divide the total number of return visits by the total number of junior doctor weeks

$$\frac{8{,}000}{48}$$

equals 16.6 return visits per week

2B. Divide return visits per week by number of patients per clinic session

$$\frac{166.6}{15}$$

equals 11.1 consulting sessions per week

2C. Divide number of consulting sessions per week by number of clinic sessions per week

$$\frac{11.1}{10}$$

equals 1.11, rounded to **two** c/e bays required.

The theoretical minimum accommodation for 10,000 attendances, with a 1 to 4 ratio for new referrals to return visits, is therefore:

one c/e room, for referrals
one c/e bay, for history taking and vision testing
two c/e bays, for follow-up patients

Total of **four** c/e spaces, in one c/e suite.

However, this calculation assumes virtually full occupancy across a range of specialties and consultants, and makes no provision for peak loading in certain specialties due to variations in case mix. Calculating the effect of a different case mix is illustrated in Option 2, below.

Option 2: Assuming 55% new referrals and 45% follow-ups

To illustrate the effect of variations in case mix, the total number of c/e spaces required can be recalculated based on data supplied by an out-reach unit, Hospital X (see Table 1). The table shows the total number of attendances divided by specialty, and indicates the ratio of referrals to return visits for each specialty. On average, 55% of attendances are new referrals, and 45% are return visits.

Table 1 Hospital X, 10,000 out-patient attendances, by specialty

Specialty	% throughput	% referrals	% follow-ups
General	33	77	23
Cataracts	22	48	52
Glaucoma	20	21	79
Medical retinal	15	44	56
Paediatrics	10	74	26

The calculation for the new case mix is as in the table below.

STEP 1: New referrals

Steps				1A	1B	
Clinic	Total no of patients	% referrals	No. of referrals	Patients per week	Session per week	Sessions rounded
General	3,300	77	2,541	60.5	4.6	5
Cataracts	2,200	48	1,056	25.1	1.9	2
Glaucoma	2,000	21	422	10	0.8	1
Medical retinal	1,500	44	660	15.7	1.2	2
Paediatrics	1,000	74	740	17.6	1.3	2
Total					9.8	12

Total number of clinic sessions required per week:

- 10 (theoretical minimum assuming sharing* of c/e spaces)
- 12 (assuming no sharing of c/e spaces)

* see section on "Sharing c/e spaces" below.

Step 1C. Dividing the total number of sessions required by the actual number of clinic sessions available, will indicate the number of c/e bays required.

Therefore, **one** c/e bay will be required if maximum utilisation is assumed.

The calculation can also be made on the basis of the average percentage of new referrals, that is, 55%.

Steps				1A	1B	1C
Clinic	Total no of patients	% referrals	No. of referrals	Patients per week	Sessions per week	No. of c/e rooms
All	10,000	55	5,500	130.9	10.07	1.07

Each method of calculation results in one c/e bay. This does not allow for variations in workload or development of the service. It would therefore be more realistic to allow for a total of **two** c/e bays.

Assuming that history taking and vision testing are carried out in c/e bays by nursing staff prior to consultation, one support c/e bay will be required for each c/e room calculated, adding a further **two c/e bays**.

STEP 2: Follow-up patients

To this must be added the number of c/e bays required for follow-up patients. Since the ratio of new referrals to follow-ups varies significantly from specialty to specialty, allowance should be made for areas of maximum demand. According to Table 1, the glaucoma clinic has the highest proportion of follow-up patients. The calculation for number of c/e bays required for follow-up patients has therefore been based on the glaucoma clinic data, as follows:

Steps				2A	
Clinic	Total no of patients	% follow-ups	No. of follow-ups	Follow-ups per week	No. of c/e bays*
Glaucoma	2,000	79	1,580	37.6	2.5

*Assuming only one clinic session per week

Total of 2.5, rounded to **three** c/e bays required for follow-up patients.
In addition, **one** bay is required for a glaucoma monitoring nurse.

Total accommodation for follow-up patients is therefore **four** c/e bays.

However, no provision has been made for maximum demand within this specialty. Empirical evidence suggests that a factor of 25% should be added to cater for periods of maximum demand caused by unplanned episodes, walk-in patients etc, although this factor will vary according to operational policy and management efficiency.

25% allowance for maximum demand within specialty results in addition of one more c/e bay.

Total accommodation for an ophthalmology department with 10,000 out-patient attendances per annum, with 55% new referrals and 45% follow-up patients, is therefore nine c/e spaces, divided into two c/e suites.

To calculate the size of an ophthalmology department with 45,000 out-patient attendances per annum

Option 1: Assuming

a) 22% new referrals and 78% follow-up patients*

b) nine clinic sessions per week (the tenth used for training)

* The calculation for 45,000 out-patient attendances is based on clinical data from Hospital Y, as indicated in Table 2.

Table 2 Hospital Y, 45,000 out-patient attendances

Specialty	% throughput	% referrals	% follow-ups
Glaucoma	17	15	85
Vitreo retinal	14	22	78
Medical retinal	18	18	82
Paediatrics	11	17	83
Oculoplastics	8	48	52
External eye diseases	18	15	85
Ocular motility	13	30	70

STEP 1: New referrals

Steps				**1A**	**1B**	**1C**
Clinic	Total no of patients	% referrals	No. of referrals	Patients per week	Sessions per week	No. of c/e rooms
All	45,000	22	9,900	235.7	18.13	2.0

Number of c/e rooms, and hence suites, required for new referrals is **two**.

However, this calculation assumes maximum utilisation and makes no provision for variations in demand. It would seem more realistic, therefore, to assume **three** c/e suites.

The calculation for 45,000 out-patient attendances assumes that history taking and pre-consultation vision tests will not take place in the c/e suite, so additional support c/e bays have not been included. Some history taking may be carried out at the reception desk, and routine tests such as visual acuity could be carried out in vision testing spaces (see paragraph 4.24).

STEP 2: Follow-up patients

Steps				**2A**	**2B**	**2C**
Clinic	Total no of patients	% follow-ups	No. of follow-ups	Patients per week	Sessions per week	No. of c/e rooms
All	45,000	80	36,000	750	50	5.5

Number of c/e bays required for follow-up patients is 5.5, rounded to **six**.

A total of six c/e bays is a theoretical minimum as no provision has been made for maximum demand. Using again the example of a glaucoma clinic, it is possible to determine how many c/e bays will be required to cope with the largest clinic session.

The total number of glaucoma patients in this calculation is based on the data in Table 2, which indicates that 17% of total attendances are glaucoma patients. The calculation for 10,000 attendances, however, was based on a percentage 20%. The difference can be explained by variations in operational policy. Glaucoma patients in Hospital X are all seen in the glaucoma clinic. In Hospital Y, however, all ophthalmic consultants carry out some glaucoma work. This means that some glaucoma patients may be treated by their consultant in a general clinic, and may not need to attend the glaucoma clinic. Planning teams should take such operational policies into consideration.

Steps		2A	
Clinic	Total no of patients	Patients per week	No. of c/e rooms
Glaucoma	7,650	159.3	10.6

* 17% of total out-patient attendances, as indicated in Table 2
** Assuming only one clinic session per week

Total number of c/e bays required is 11.
Plus one for glaucoma monitoring nurse = 12.
Plus 25% for peak loading = **15** c/e spaces total.

Sharing c/e spaces

The initial calculation for 45,000 attendances revealed that three c/e rooms and six c/e bays are required, a total of only nine c/e spaces. However, the calculation above has shown that the large glaucoma clinic will need 15 c/e spaces. This implies that clinics will need to be divided into different sessions and that some sharing of space with other clinics may be necessary. For example, the glaucoma clinic could be divided as follows:

3 sessions at 5 spaces

or 4 sessions at 4, 4 and 3 spaces

or 5 sessions at 3 spaces

The optimum distribution of clinic sessions can be determined by assessing the workload for each specialty.

Appendix C – IT network diagram: glossary of terms

Introduction
This glossary explains the meaning of those terms used in connection with "Station functions" in Figure 2 (paragraph 3.24 of this Note) that are not self-explanatory.

Appointments
Maintaining, or making enquiries of, the appointments system for the ophthalmology department.

Care planning
Access to a system which supports:

- the systematic planning of care, appropriate to a patient's assessed needs;
- the calculation of the amount of nursing resource, and the correct skill mix, necessary to deliver the planned care.

Clinical coding
The process by which clinical information, for example diagnoses, symptoms and treatment, is entered into a computer in a coded form. It is noted that one element of the NHS Information Management and Technology (IM&T) strategy is the development of a thesaurus of coded clinical terms and groupings.

Community contact
A facility to exchange patient information with community, general and/or other sectors or agencies, for example a Social Services Department, either by electronic mail or directly by means of a computerised communications network.

Contracting
A facility which enables the activities of an ophthalmology department to be monitored against its contracts and which assists with the management of extra-contractual referrals.

Decision support
Access to a system which can present either clinical or management information in a way that assists the process of decision-making or planning. Systems typically make strong use of graphical displays and allow a level of statistical analysis or "what if" modelling.

GP contact
A facility to exchange patient information with general practitioners, either by electronic mail or directly by means of a computerised communications network. This facility is also a feature of the NHS IM&T strategy.

Health records
Access to health records held electronically as text, coded data or digitised images, for example X-rays.

Nursing management system
The "Patient assessment", "Care planning" and "Staff rosters" functions are usually combined in a single nursing management system.

Orders
Electronically placing orders for tests, for example blood tests and X-rays, and clinical services, for example physiotherapy and audiology. This function may also include the ability to enquire on the status of orders placed previously, for example received, being processed, and completed.

Order communications system
The "Orders" and "Results" functions are usually combined in an order communications system.

Patient assessment
Access to a system which supports the structured assessment of a patient's requirement for clinical care and the systematic collection of data associated with the assessment.

Results
Electronically receiving results of orders, for example results of blood tests and X-rays, direct from clinical service departments. This function may also include the ability:

- for urgent results to be "automatically" referred for the attention of the responsible clinician;
- to enquire on a series of results relating to a single patient.

Staff rosters
Maintenance of rosters for nursing staff. Computer systems can assist nurse managers in the preparation of rosters.

Supplies, stock control and ordering

Electronically placing orders for non-clinical services, for example for repairs or supplies. This function may also include the ability to enquire on the status of orders placed previously, for example received, being processed, and completed.

Waiting lists

Access to a clinician's waiting list management system.

Appendix D – Ergonomic diagrams

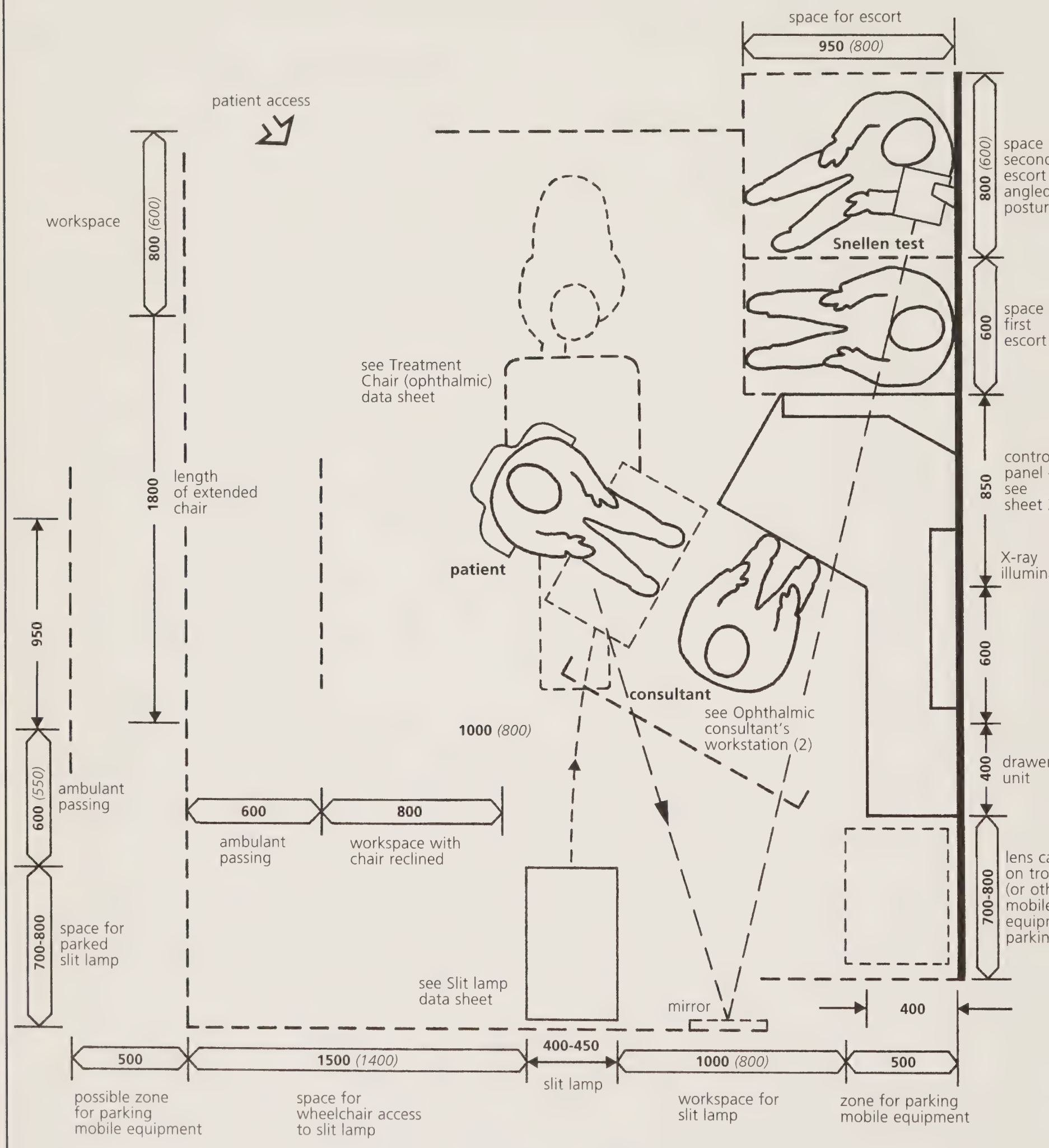
1. Ophthalmic consultant's workstation (1)
2. Ophthalmic consultant's workstation (2)
3. Treatment chair
4. Slit lamp
5. Perimeter or visual field analyser
6. Snellen test
7. Synoptophore
8. Orthoptist's room
9. Treatment room

Activities
Writing up notes etc, consultation including examination of the eye using Slit lamp, Snellen test, other apparatus, and also minor treatment of the eye

NHS Estates **Ergonomic Data Bank**
Activity space example layout, not to scale

Ophthalmic consultant's workstation (1)

Users
Consultant, patients – adult and children



1350 *(1300)*

Preferred minimum — *Restricted minimum (not recommended for general use; see explanatory note)*

1. Drawing to be read in conjunction with Ophthalmic consultant's workstation (2) (3). See also data sheets on Slit lamp and Treatment Chair (ophthalmic).

2. When the patient is a young child it may sit on its mother's knee in the treatment chair. Alternatively the mother may sit by the side of the treatment chair, whilst the child is undergoing examination in the treatment chair.

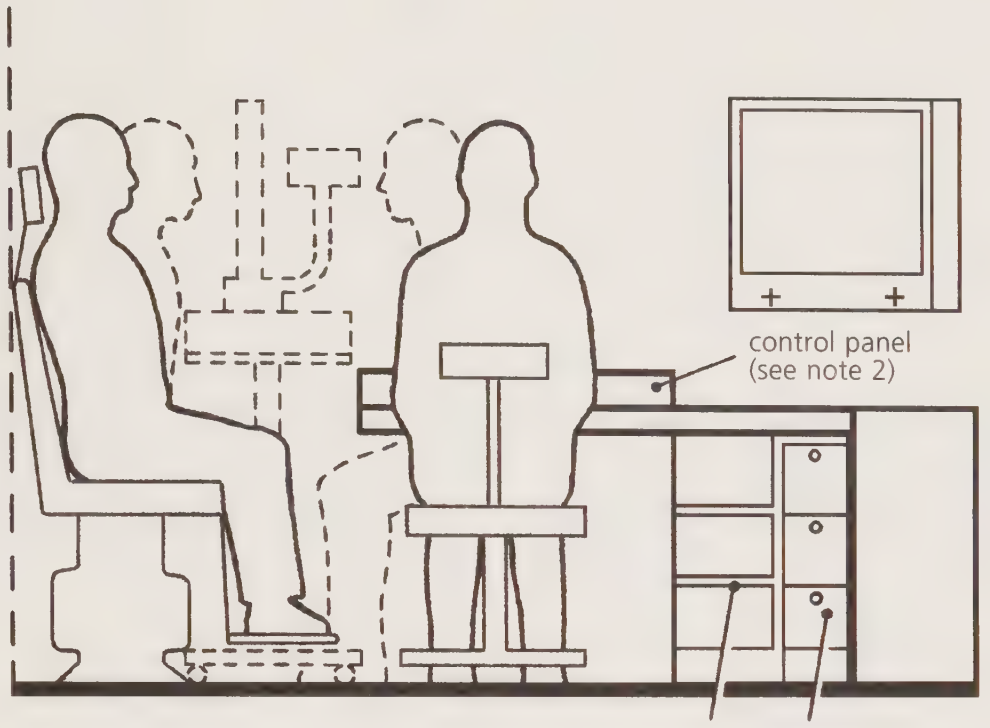
3. Full rotation of prone patient is obstructed by projecting worktop. Full rotation of chair is however possible in upright position. Proximity of patient to consultant is desirable for all examinations other than those requiring a prone posture, consequently som inconvenience in respect of extended chair and pass ing between chair and desk may be acceptable.

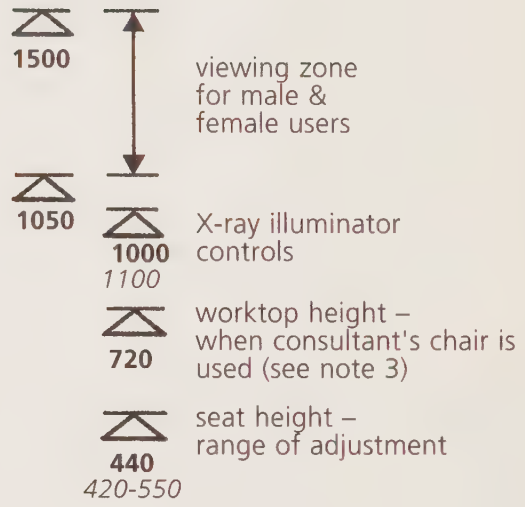
Activities
Writing up notes etc, consultation including examination of the eye using Slit lamp, Snellen test, other apparatus, and also minor treatment of the eye

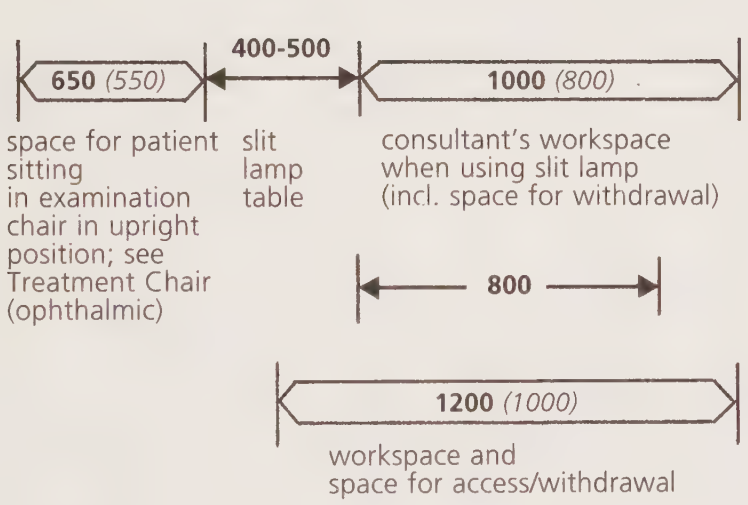
NHS Estates **Ergonomic Data Bank**
Activity space example layout, not to scale

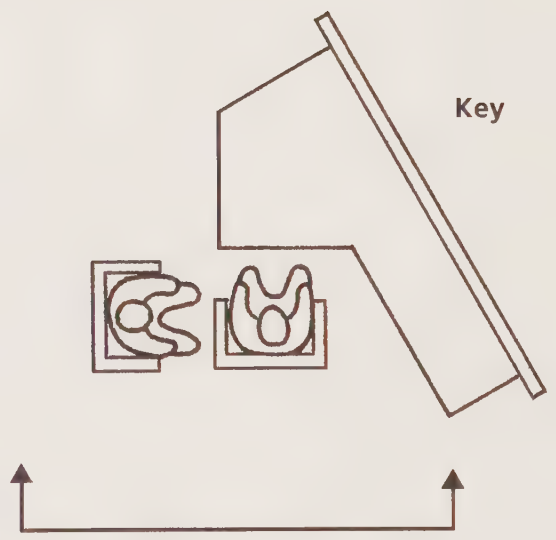
Ophthalmic consultant's workstation (2)

Users
Consultant, patients – adult and children









1350 *(1300)*

Preferred minimum — *Restricted minimum (not recommended for general use; see explanatory note)*

Notes

1. Drawing to be read in conjunction with Ophthalmic consultant's workstation (1). See also data sheets on Slit lamp, and Treatment Chair (ophthalmic).

2. Control panel for room and desk/examination light switches. Snellens apparatus light and control switches and Snellens handset control jack are best positioned where they can be operated by the consultant when facing the patient.

3. The height of the consultant's chair should be adjustable from 420 to 550 for use in conjunction with the worktop shown, the adjustable height treatment chair, the slit lamp table and other equipment. (Alternatively, a higher chair or stool with a seat height range of 450–650 can be used in conjunction with a higher worktop of 800–850).

Activities
Examination and treatment of patients eyes in reclined position

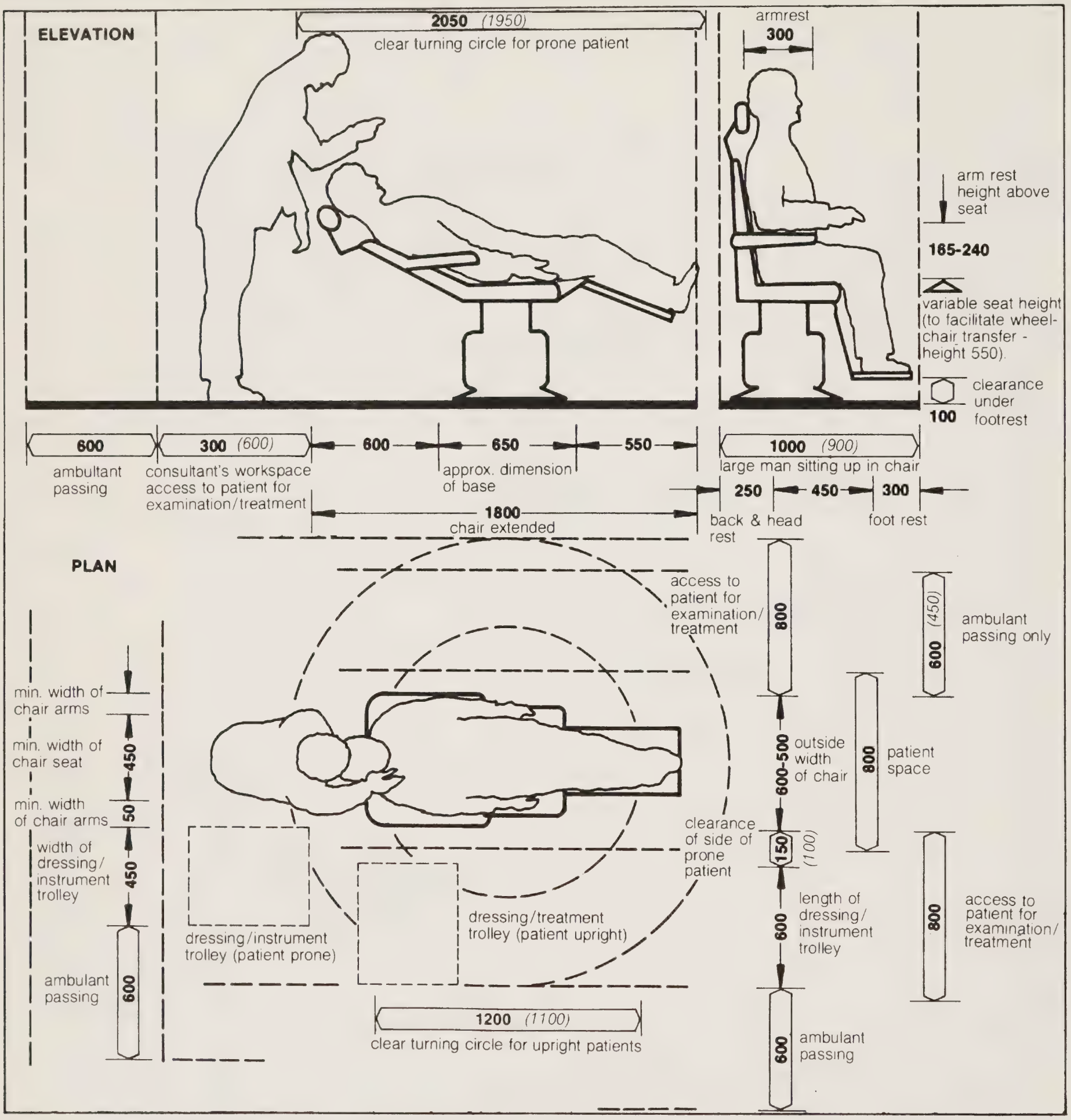
***NHS Estates* Ergonomic data bank**
Component-user data sheet, not to scale

DHSS **Ergonomic data bank**
Component-user data sheet, not to scale

Treatment chair

Ophthalmic
Chair with adjustable height and angle of recline

Users
Consultant, adults, children (see note 1)



Notes

1. It is possible to satisfactorily provide a facility which will provide the range of adjustment necessary for adults and children. The recommendations are therefore primarily concerned with adult usage. However children are generally more adaptable than adults, and whilst the facility is not ideal for child use, it can be used, especially by larger children, without too much inconvenience. For smaller children some improvisation will inevitably be necessary for satisfactory usage (e.g. thje provision of an inset backrest/locational support during upright posture examinations)

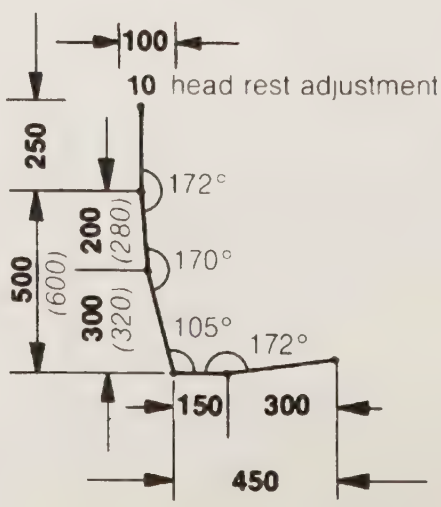
2. The neck and head support must be adjustable in all cases to allow accommodations of all potential users

3. See also Opthalmic consultant's workstation data sheet

4. Desirable range of head rest adjustment 500-850 above seat height (min. depth of head rest 150).

5. Minimum zone for lumbar support should be between 200 and 300 above seat height.

6. Recommended angles of seat in upright position.



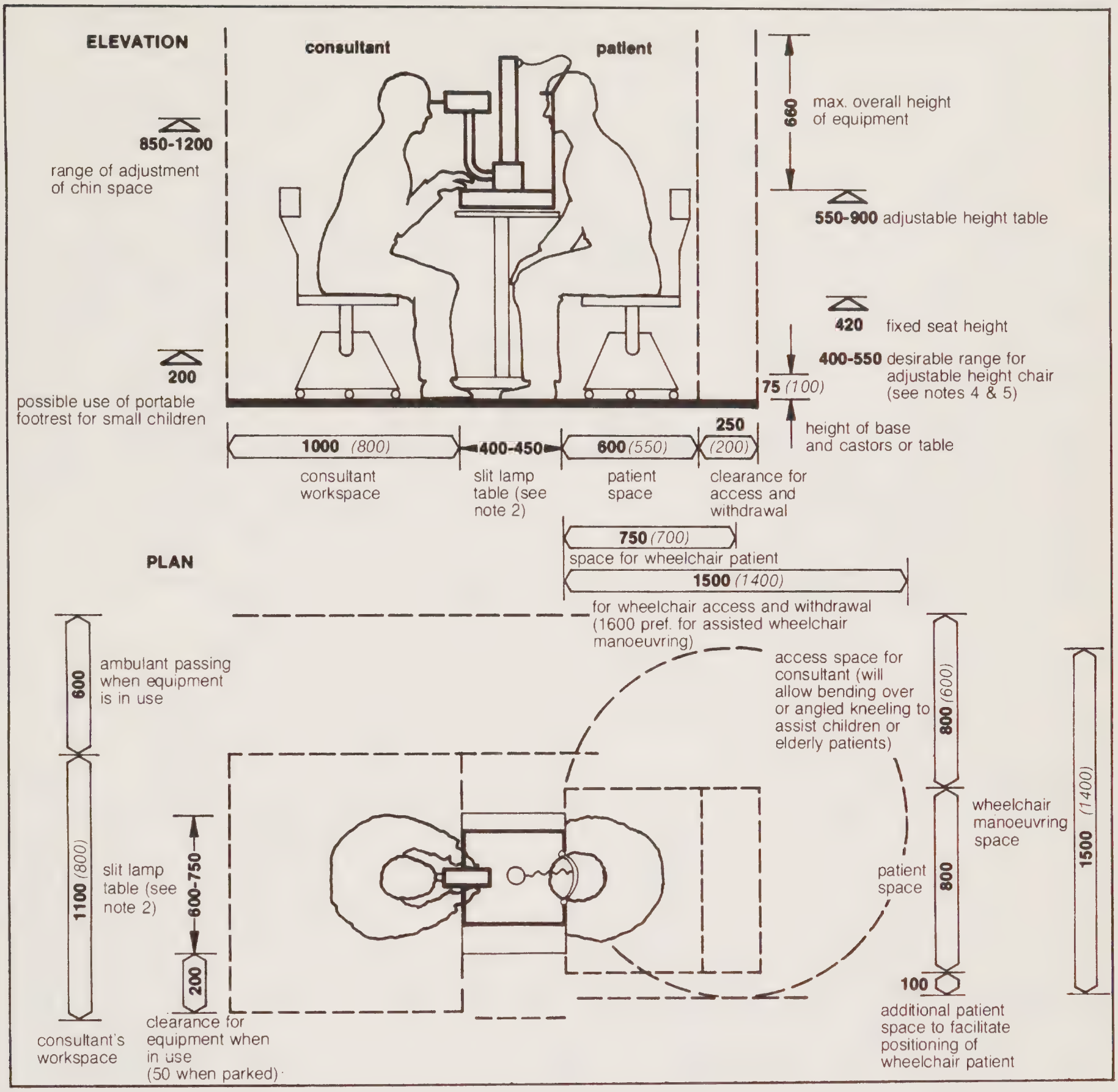
Activities
Examination of patient's eye using binocular viewers and a strip of light, which can be varied in size both horizontally and vertically

***NHS Estates* Ergonomic data bank**
Component-user data sheet, not to scale

Slit lamp

With mobile, adjustable height table

Users
Ophthalmic Consultant, adults, children and occasional wheelchair users



1350 *(1300)*

Preferred minimum *Restricted minimum (not recommended for general use: see explanatory notes)*

Notes:

1. The slit lamp is an item of equipment which normally forms part of the Ophthalmic Consultant's workstation. See data sheet on Ophthalmic Consultants Workstation.

2. Design of mobile adjustable height table — this should be very stable. The base, together with the castors should be low enough to pass under the footrest of a standard wheelchair 75 (100). A cantilever type base is preferred.

3. A minimum table height of 650 is acceptable for adult use, but is not low enough for small children using a 420 fixed height seat.

4. An adjustable height chair is essential as it offers greater flexibility, especially in dealing with children and it used in conjunction with an adjustable height table.

5. Wheelchair users, seat height including cushion — 530 (480 without cushion).

6. Lightweight upright chair on castors. Add 50-100 overall (including clearances) for heavier upholstered chairs.

7. The equipment shown cannot conveniently accommodate the whole range of potential users. These recommendations are therefore principally concerned with accommodating adult use, and use by larger children. Use by smaller children will essentially require some improvisation or adaptation.

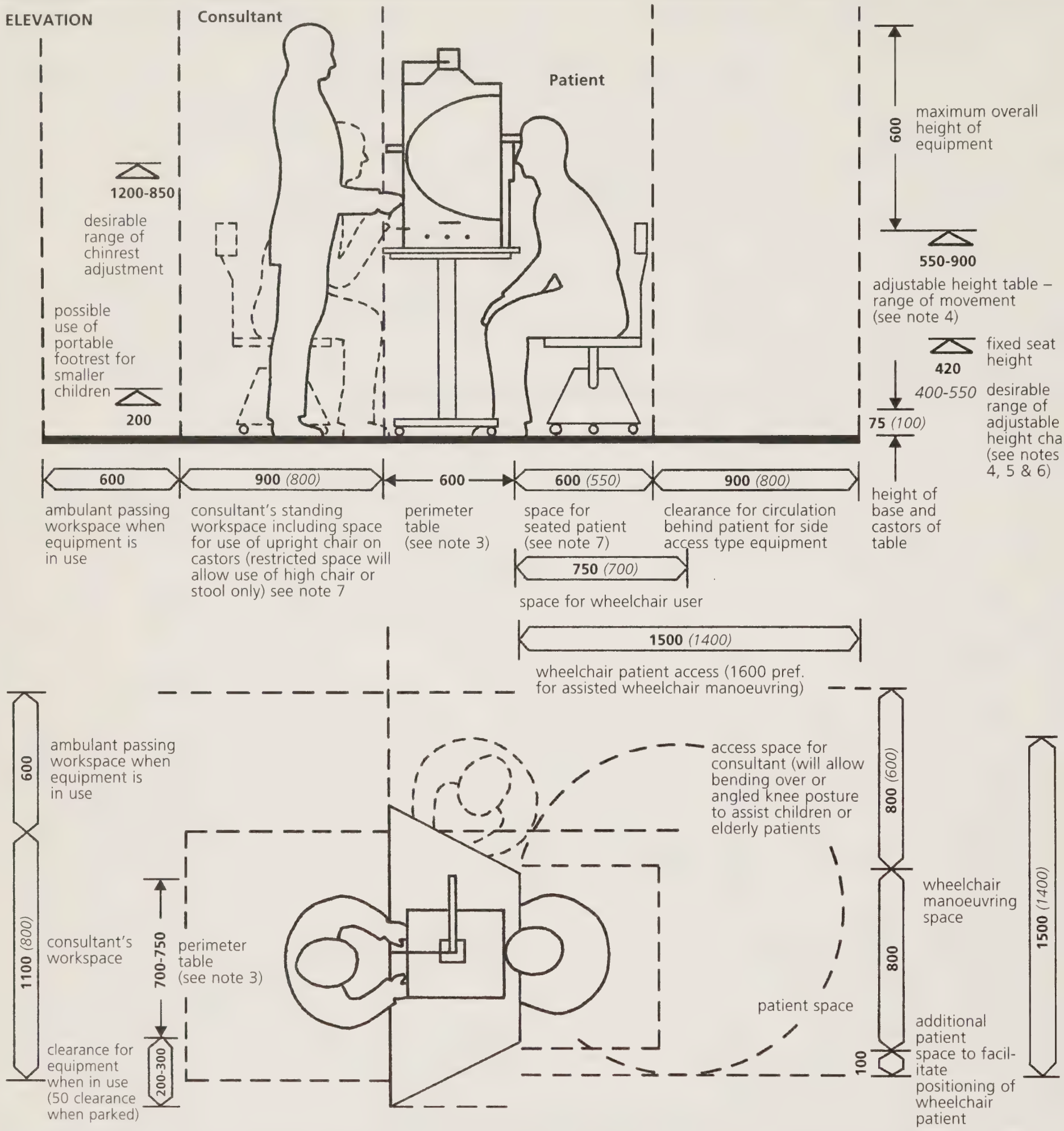
Activities
Facilities for examination of the patient's eyes using a self-recording perimeter. The patient is seated for the examination and the recording of results is supervised by a member of staff standing or occasionally sitting behind the perimeter with good working side access to patient. Examination takes place in a dark or darkened room.

NHS Estates **Ergonomic Data Bank**
Activity space example layout, not to scale

Perimeter or Visual Field Analyser

Self recording

Users
Ophthalmic staff & adults, children, occasional wheelchair users


ELEVATION
Consultant
Patient
1200-850
desirable range of chinrest adjustment
possible use of portable footrest for smaller children
200
600
maximum overall height of equipment
550-900
adjustable height table – range of movement (see note 4)
420
fixed seat height
400-550
desirable range of adjustable height cha (see notes 4, 5 & 6)
75 (100)
height of base and castors of table
600
ambulant passing workspace when equipment is in use
900 (800)
consultant's standing workspace including space for use of upright chair on castors (restricted space will allow use of high chair or stool only) see note 7
600
perimeter table (see note 3)
600 (550)
space for seated patient (see note 7)
900 (800)
clearance for circulation behind patient for side access type equipment
750 (700)
space for wheelchair user
1500 (1400)
wheelchair patient access (1600 pref. for assisted wheelchair manoeuvring)
600
ambulant passing workspace when equipment is in use
1100 (800)
consultant's workspace
700-750
perimeter table (see note 3)
200-300
clearance for equipment when in use (50 clearance when parked)
access space for consultant (will allow bending over or angled knee posture to assist children or elderly patients
800 (600)
wheelchair manoeuvring space
800
patient space
100
additional patient space to facil-itate positioning of wheelchair patient
1500 (1400)

1350 *(1300)*

Preferred minimum — *Restricted minimum (not recommended for general use; see explanatory note)*

Notes

1. The Perimeter is an item of equipment which is used to measure the field of vision of the eye.
2. Two types of visual Field Analyser are shown – basic model (A), where filter and other controls are at the rear, and a generally more comprehensive model (B) where the operator controls and records the results to the side of the equipment (see dotted alternative positions for consultant).
3. Design of mobile adjustor height table – this should be very stable. The base together with the castors should be low enough to pass under the footrest of a standard wheelchair 75 (100). A cantilever type base is preferred.
4. A minimum table height of 650 is acceptable for adult use, but is not low enough for small children using a 420 fixed height seat.
5. An adjustable height chair is essential as it offers great flexibility, especially in dealing with children and is used in conjunction with an adjustable height table.
6. Wheelchair users seat height including cushion – 530 (480 without cushion).
7. Lightweight upright chair on castors. Add 50–100 overall (including clearance) for heavier upholstered chairs.
8. The equipment shown cannot conveniently accommodate the whole range of potential users. These recommendations are therefore principally concerned with accommodating adult use and use by large children. Use by smaller children will require some improvisation or adaptation.

Activities

Estimating errors of refraction with a test card fixed at 6m in front of a seated patient. Recording results.
(With the 3m (indirect) type the patient sees the image reflected in a wall mounted mirror — see note 3).

***NHS Estates* Ergonomic data bank**

Component-user data sheet, not to scale

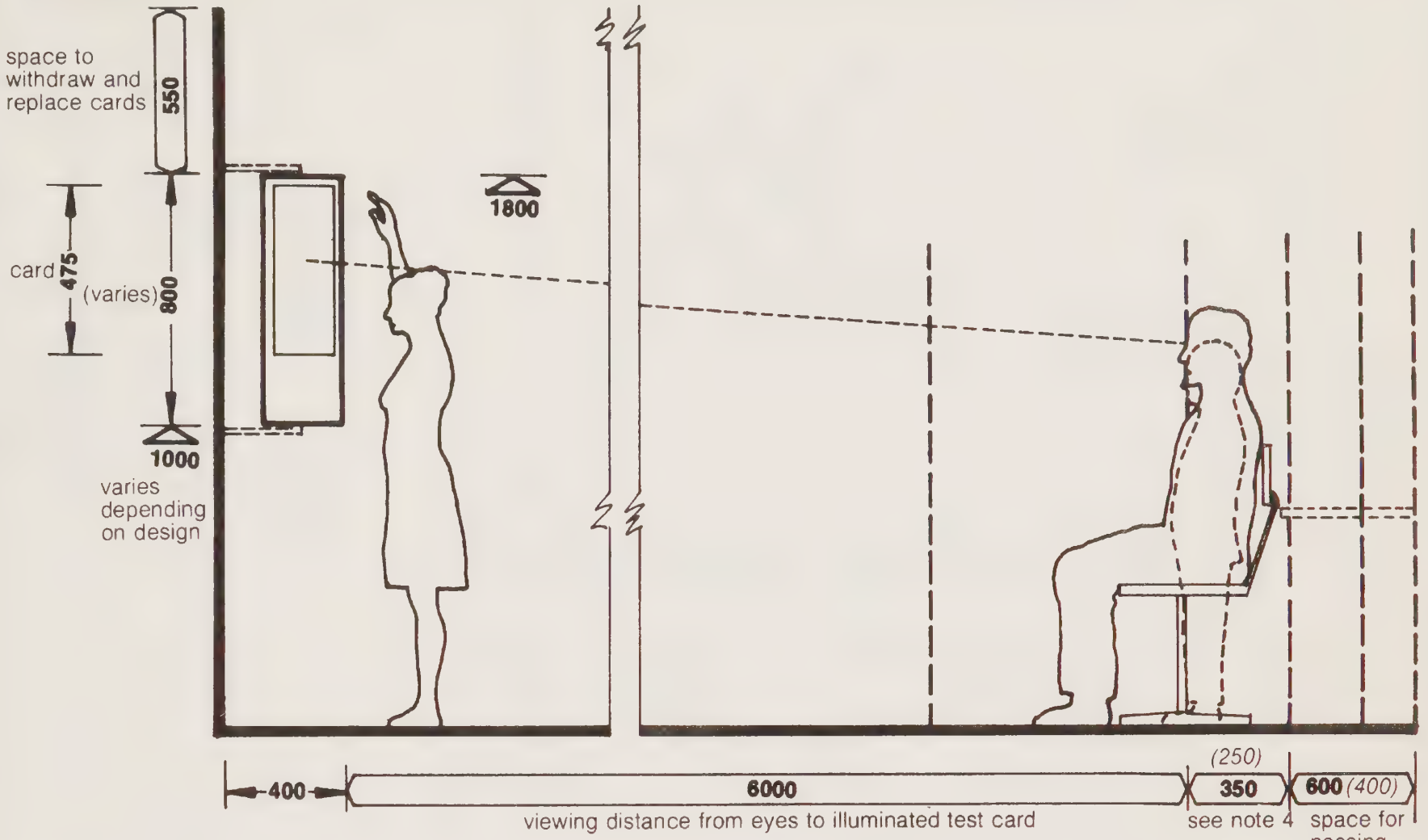
Snellen test

Wall mounted at 6m (direct) or 3m (indirect see note 3)

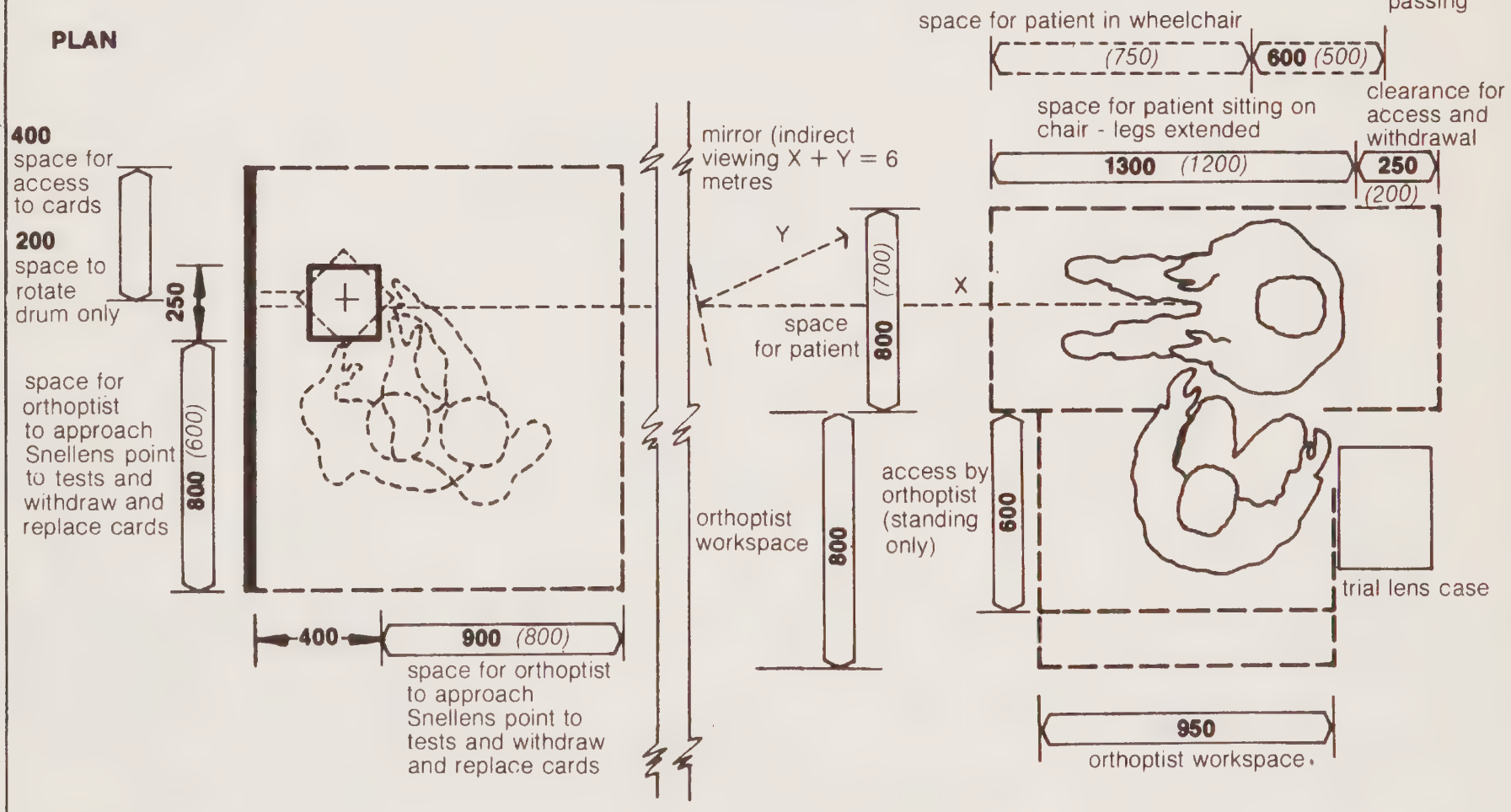
Users

Orthoptists, ophthalmic staff & children and adults, occasionally wheelchair users

ELEVATION



PLAN



1350 *(1300)*

Preferred minimum *Restricted minimum (note recommended for general use: see explanatory notes)*

Notes

1. The Snellens test may form part of an orthoptic workstation designed to allow this and other tests on patients and to take place at or from a single seated examination position.

2. The Snellens drum may be rotated, by hand, or mechanically, or electrically (a floor stand model is also available).

3. Indirect viewing — the patient views the image of the test card in a non distorting wall mounted or stand mounted mirror (550 x 350) the total viewing distance being 6M.

4. Dimension from eye position to slumped back of chair — 350 relates to viewing with a slumped posture (250) relates to an upright posture.

Activities

Testing patients for squints. Seated patient views slides through binocular viewer. Orthoptist feeds slides into the apparatus. (A typical test involves a patient viewing a slide of a lion and a slide of a cage through the viewer and seeing whether the lion appears to be inside the cage.)
Recording results.

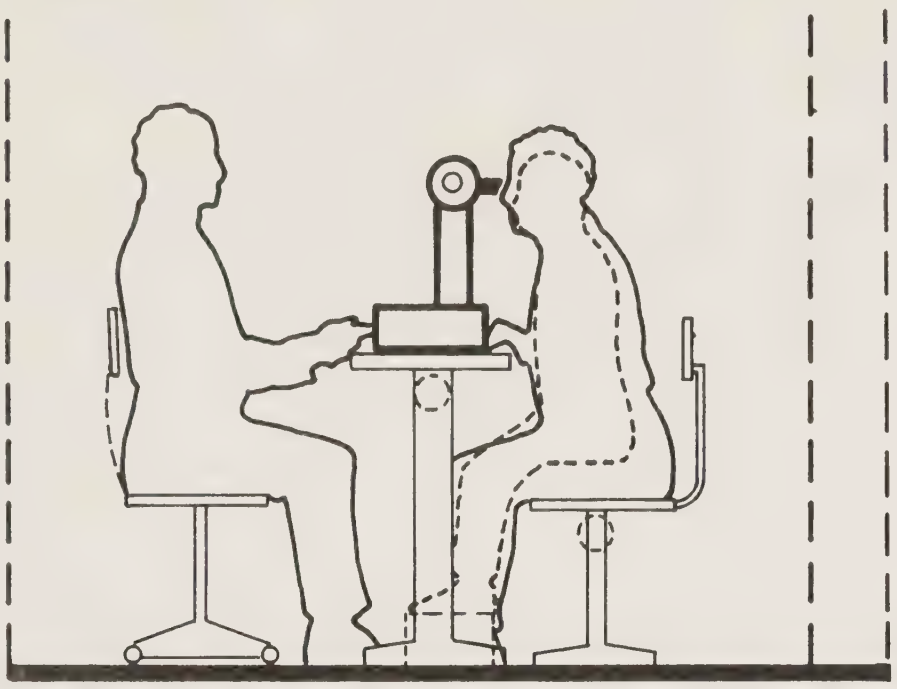
***NHS Estates* Ergonomic Data Bank**
Component-user data sheet, not to scale

Synoptophore

With mobile adjustable height table

Users
Orthoptist & patients – Children (mainly)
Adult, occasionally wheelchair users

ELEVATION



700
associated worktop (for seated use)

400 height of synoptophore

600-1050 adjustable height table (essential) range of adjustment (see note 3)

400-550 adjustable height chair desirable range (see note 4)

400-420 fixed height chair

200 portable footrest (for children)

900 *(800)* orhtoptist's workspace including space for withdrawal

450 synoptophore table

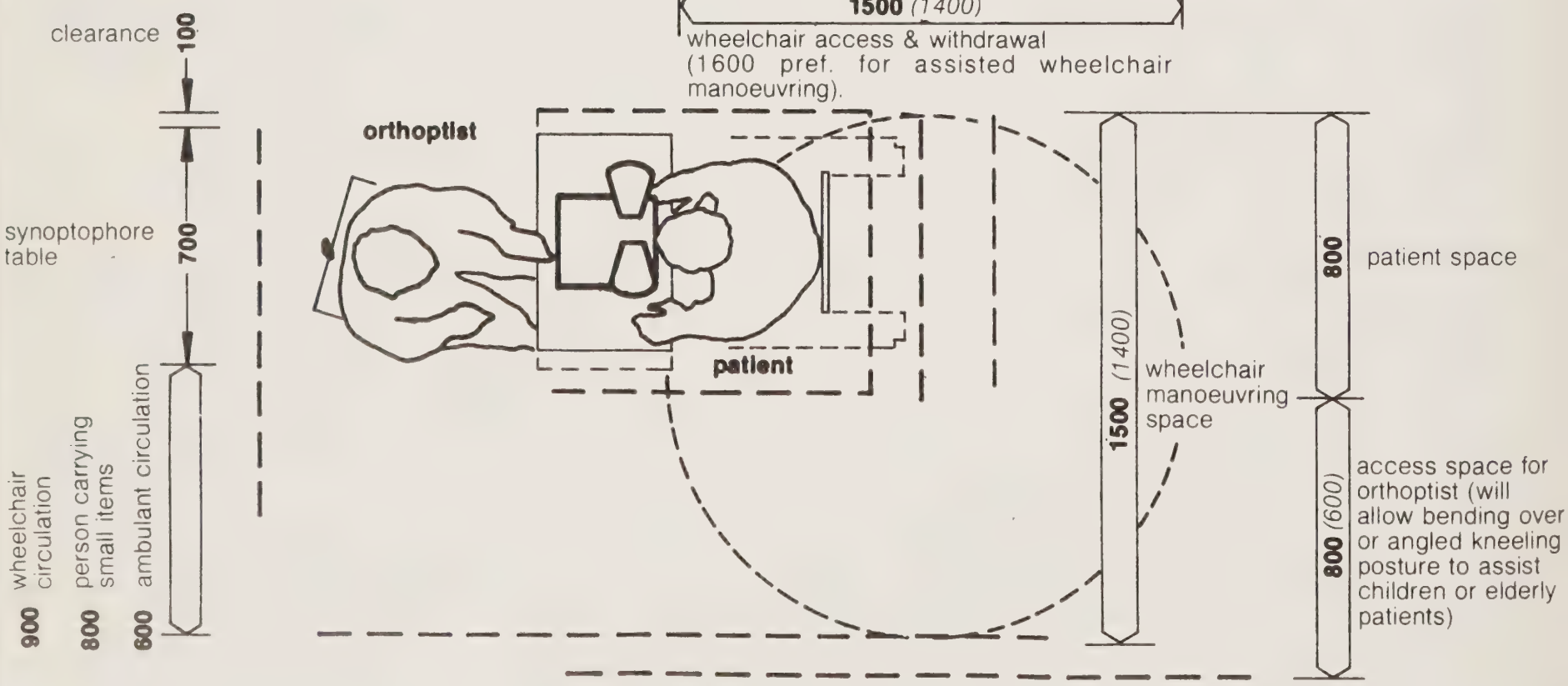
650 *(600)* space for seated patient

250 clearance for access and withdrawal

750 *(700)* space for wheelchair patient

PLAN

1500 *(1400)* wheelchair access & withdrawal (1600 pref. for assisted wheelchair manoeuvring).


clearance 100
synoptophore table 700
orthoptist
patient
1500 (1400) wheelchair manoeuvring space
800 patient space
800 (600) access space for orthoptist (will allow bending over or angled kneeling posture to assist children or elderly patients)
900 wheelchair circulation
800 person carrying small items
600 ambulant circulation

1350 *(1300)*

Preferred minimum — *Restricted minimum (not recommended for general use; see explanatory note)*

Notes:

1. The Synoptophore test may form part of an Orthoptist's Workstation designed to allow the majority of orthoptic tests and consultation to take place from a single seated examination position

2. Design of mobile adjustable height table – this should be of the cantilever type with adjustable height mechanism on a pillar support on one side only. The base, together with the castors, should be low enough to pass under the footrest of a standard wheelchair (100 max.).

3. A minimum table height of 650 is acceptable for adult use, but is not low enough for small children using a 400 fixed height seat.

4. An adjustable height chair is not essential but it does offer greater flexibility, especially in dealing with children and if used in conjunction with an adjustable height table.

Activities

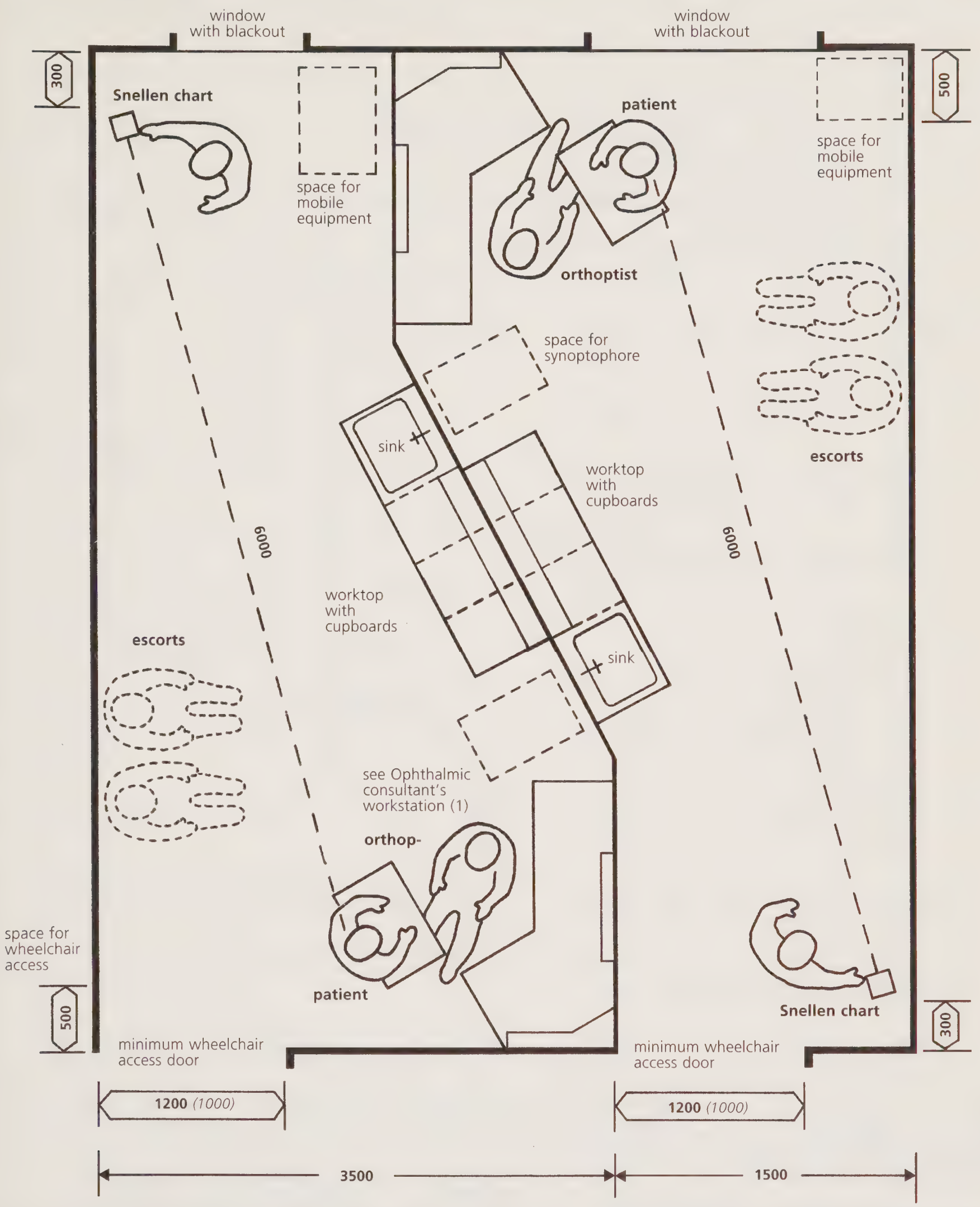
Writing up notes etc, consultation including examination of the eye using synoptophore, Snellen test and other apparatus.

See also component user data sheet on: **Snellen test.**

Orthoptist's room

Users
Orthoptist, patients – children and adult

NHS Estates **Ergonomic Data Bank**
Activity space example layout, not to scale



1350 *(1300)*

Preferred minimum

Restricted minimum (not recommended for general use; see explanatory note)

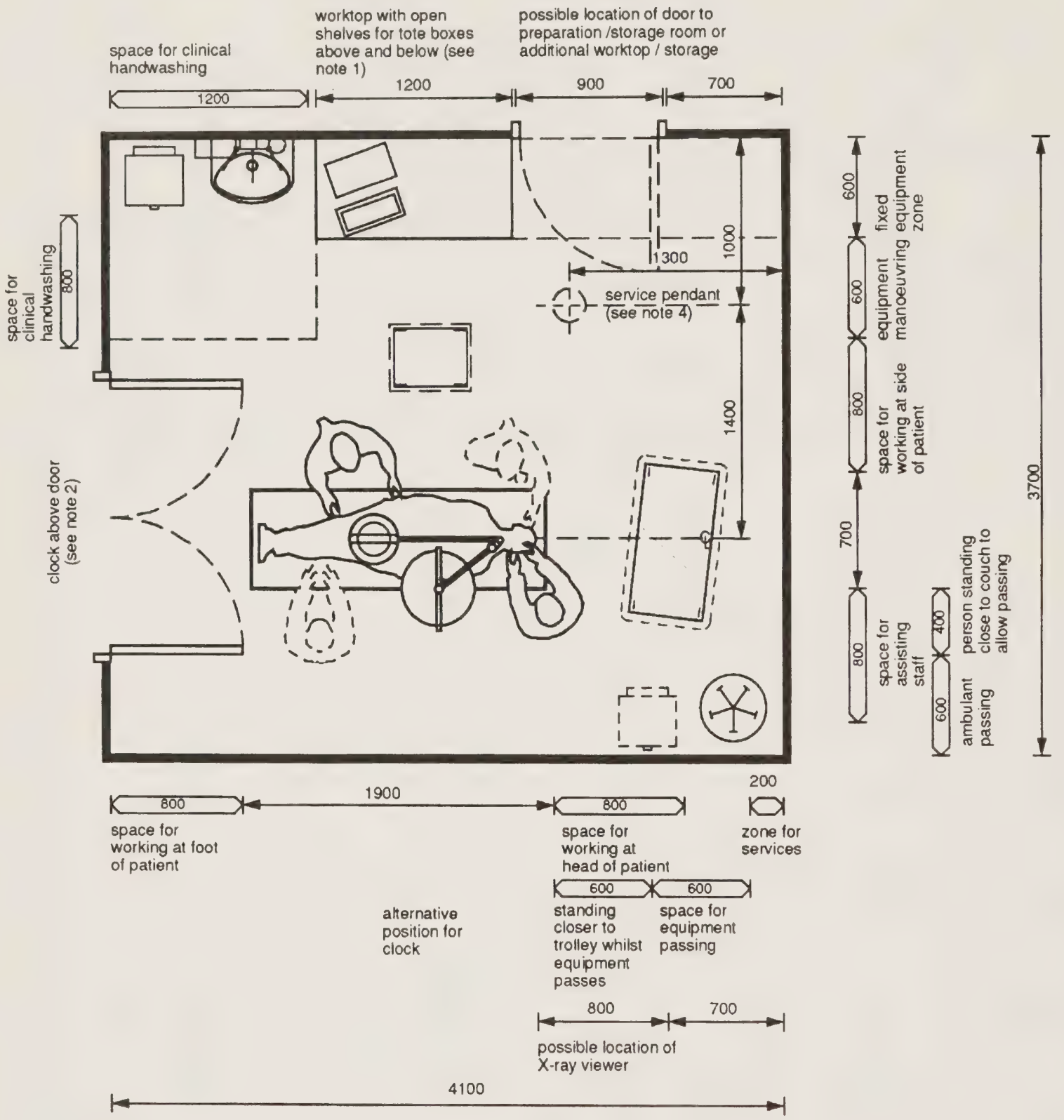
Activities:
Facilities for medical and nursing staff to perform procedures requiring a clinical environment (i.e. minor operative procedure). Procedures will be performed by 1-4 staff who may need to work from all sides of the trolley. Facilities for recording patient data and storage of dressings either on the dressings trolley or elsewhere and disposal of soiled dressings should be provided, as should facilities for clinical handwashing

NHSEstates Ergonomic Data Bank
Component-user data sheet, not to scale

Treatment Room

major

Users:
Up to 4 staff and patient (with or without escort), patient may be ambulant, semi-ambulant or in a wheelchair.



Notes:

1350 *(1300)*
Preferred minimum: *(Restricted minimum, not recommended for general use, see explanatory notes)*

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1. Open shelving with tote boxes are the most appropriate for storage of medical supplies for the treatment room. Shelves should not be higher than 1700. If shelves are provided over a 900 high worktop, the worktop should not be deeper than 600, the shelf depth 300 and the max. shelf height 1650.

2. A clock with second hand sweep is required for monitoring the operating procedures.

3. The trolley should be adjustable in height to facilitate patient transfer, especially from a wheelchair, as well as being adjustable for the requirements of the different staff and treatments.

4. Service pendants are a project option.

5. Patient notes could be made on a writing flap or entered on to a computer which should be on a 800 high worktop to facilitate use whilst standing.

6. An emergency call system for the staff and a nurse call system for the patient should be provided.

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